

MINICAM

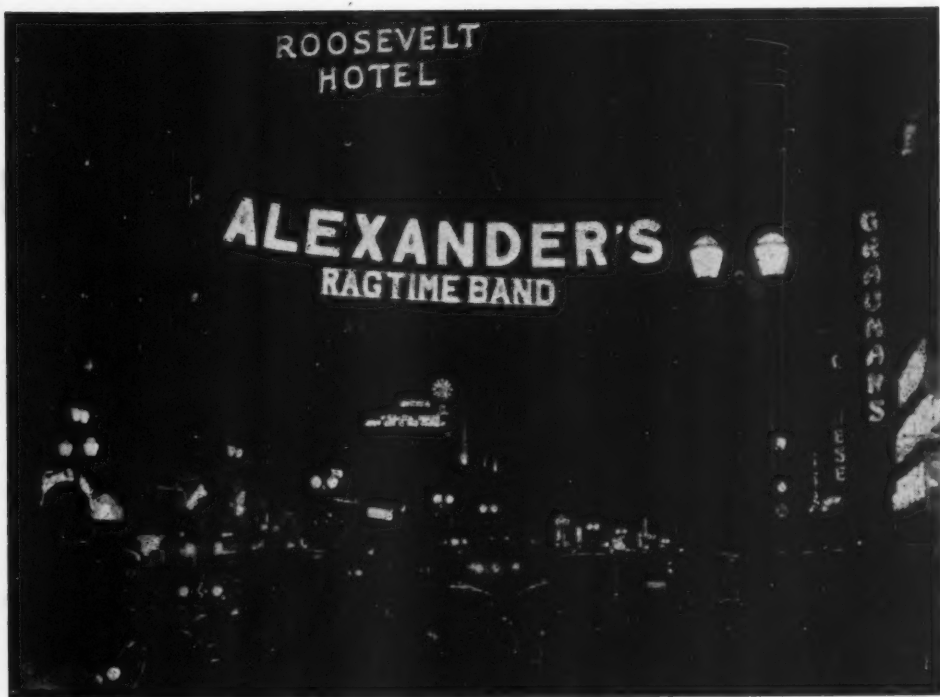


The Miniature Camera Monthly — For Every CAMERA User



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THE NIGHT LIFE OF A FAMOUS COUPLE

THIS couple is one of the most famous combinations in photography—Agfa Ultra-Speed Pan 35 mm. film and Agfa Brovira Paper.

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BROVIRA PAPER**

Agfa

C O N T E N T S

Vol. 2

JANUARY, 1939

No. 5

MINICAM MONTHLY

WILL LANE, *Editor*

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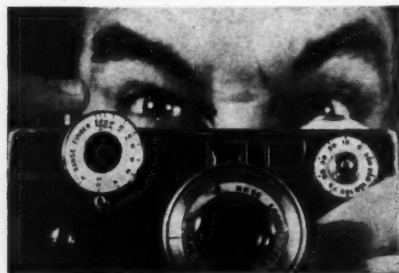
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"In Focus"

Looks to His Prey?

Sirs:

Right after I bought my new Argus, several months ago, I found that by removing the



spring steel device that stops rotation of the mount at 3½ feet, the lens could be turned out to focus on objects approximately 9 inches away before becoming disengaged entirely from the secondary part of the lens mount. During this past summer I took several outside portraits up as close as 12 inches, with excellent results.

This shot was made in front of the mirror in my bathroom using the light from two 50-watt bulbs in sockets about 8 inches on each side of the mirror. I set the lens mount at 9 inches and held the camera about 5 inches from the mirror, using the reflection of myself in the lens as a view finder.

The rest of the dope is discernible in the print, namely, stopped to f11 and hand-held at 1/10th of a second. Agfa Superpan Su-



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PERFEX

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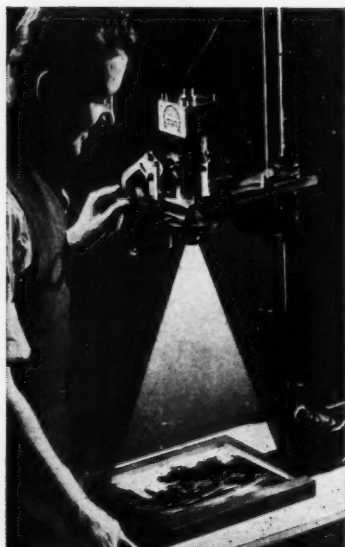
"Never missed a shot in a year, no trouble," writes L. I. H., of San Francisco.

"Still working perfectly after 15 months, and I mean 100%," says F. J. S., Ames, Iowa.

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416 Kalart Equipment made in U.S.A.



Long hand lever for speedy, accurate focusing.

preme film, developed in Edwal 12 for 18 minutes. Projected on Agfa Brovira glossy. Incidentally, I wonder if this is the way the dyed-in-the-wool candid hound looks to his prey?

CHAS. A. BROOKS.

Cincinnati, Ohio.

- Better than disrupting the manufacturer's careful camera adjustments, is the use of a lens extension tube or a supplementary (portrait) lens or both, for closeup work.—Ed.

Football Payoff

Sirs:

This is a copy of a check which was used to pay a football bet.



It was made, by placing the original bank check on the printing paper, and then projecting the picture through the check onto the paper.

WILLIAM JOHN LEFFLER.

New York, N. Y.

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"No Maestro"

Sirs:

In your November, 1938, issue of *MINICAM*, your "In Focus" department begins with a slightly out of focus blast by Dick Fletcher of Davenport, Iowa. He claims that his self portrait "will be difficult to top by your readers." As one of these readers, I cannot sit back and let such a challenge go unanswered. Incidentally, I can't help but feel that my answer will be but a drop in a deluge of responses.

I enclose two self pix that I made about a year ago. At the time, I did not consider them



good enough to submit for your consideration. However on reading Maestro Fletcher's letter and viewing his self portrait, I rushed to my neg files and dug up the long forgotten shots. A little dark room work with my creaky home made enlarger produced the enclosed.

For photographic excellence I know the picture may not rate high, but as you may perceive they were taken under difficulties.

The playing card shot was the most difficult to take and was made as follows:

I set my camera on a tripod, fixed the distance and stop and centered my camera by using a piece of colored paper pasted on the wall where I was to stand. When all this was set I turned on two No. 2 floodlamps, set the selftimer, pressed the shutter release, grabbed the two bunches of cards and fanned them out, then hopped in front of the camera just in time for the click.

This is the first picture I have ever submitted to any paper or magazine since I began photography as a hobby over a year ago. This is only the beginning, as I feel that I have been hiding my photographic light under a basket of bashfulness.

EARNEST A. NAPLES.

Richmond Hill, Long Island.

Kodachrome Market

Sirs:

Using Kodachrome commercially, have furnished in the last few months almost a thousand slides of furniture setups for a factory. I have wondered why your excellent magazine does not, or rather has not, to my knowledge,



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The light gathering and measuring equipment is so constructed as to precisely record the true photographic light values of any scene. The special Channel Scale and Computer Ring assure that these correct light values are immediately translated into proper exposure factors without further manipulation of the meter.

Simple and compact, EOS indicates exposures from F/1.5 to F/25, and from 1/1000 second to 2 full minutes. It provides for true renditions of both black-and-white and color shots—and it may also be used for timing your enlargements. Supplied with or without a zipper leather case, EOS is ready for instant use . . . nothing to compute . . . no calculations . . . entirely self-contained.

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taken up this subject. I am finding a wonderful opportunity in it.

The traveling men are carrying these set-ups and using them for sales purposes. The slides cover rooms, single units and every phase of factory work that can find a place in the salesman's set up.

SIDNEY E. WELLS.

Wayland, New York.

Converting 2 1/4 x 3 1/4" to 35 mm.

Sirs:

Enclosed are two photographs, two prints of one negative.

The smaller is a contact print. The larger print was made with an Argus speed printer after I had performed a clipping operation on my original film (Eastman 120) trimming the negatives down to 35mm. size.

I but recently made the transition from snap-shooting with a folding camera to 35 mm. photography. I had never done any enlarging with my old-size film, although I had developed and printed my own film.

While I have taken a lot of 35 mm. footage in the last few months, I still hated to see all of my old negatives suddenly obsoleted. Many held things still of interest to me. But, contact prints were not of speed printer size, and I was not disposed to continue fussing around with my old printing frame.



●Many an old snap-shot like the above, will yield interesting closeups, as below, when a 35 mm. portion of the negative is blown up.



make a size comparison. I was surprised to notice how much of the old negative area was covered by the 35 mm. film, and how the real center of interest was entirely covered by the 35 mm. film. It took but a few minutes to crop some negatives down to size. And, in a

few minutes more I had some interesting results such as the ones I am enclosing.

Not only are my cut-down negatives usable in the speed printer, but, also, they can be used in my 35 mm. enlarger. What I have discovered is that my entire file of old-style negatives has a revived usefulness.

I am passing this along because there probably are many recent converts to miniature photography who are wondering what to do with their old negatives. Possibly, many who would like to switch to 35 mm. work hesitate to do so because of disliking to obsolete their old negative file.

I believe that a little experimentation will provide some gratifying results for anyone who is faced with this problem.

Of course, there are other ways to transfer the images on old-size negatives to 35 mm size. But, my way is quick, simple, requires no purchase of new film or processing of film, and can be done with a pair of ordinary scissors.

C. W. GRANGE.

International Research Corporation.

Lens Cap on Lens Shade

Sirs:

I have a lens cap for my camera, but usually the lens shade is in place. So I devised a lens shade cap. It is simply the lid from an aluminum 35 mm. film can. It fits closely over the lens and lens shade.

Salina, Pa.

T. N. MURPHY.

Illustrate Your Job

Sirs:

Now that the winter months are here and the camera fans will be making pictures indoors, such as table tops, still life, etc., I would like to suggest a contest which might be interesting. My suggestion is that each contestant submit a print illustrating his profession or trade. This could be a picture showing the tools or instruments the contestant uses every day, made in still life, or a picture showing the hands using these tools or instruments.

Brownwood, Tex.

ROY THOMAS.

Index

Sirs:

MINICAM MONTHLY is a real reference book around our photographic darkroom. We experience difficulty in readily locating articles however. We understand that an index has been prepared for Volume I. We would like to know if we can secure one. If there is a charge, we would appreciate your letting us know.

Dept. of Botany, JED ALFRED HYDE.
N. Y. State College of Forestry.

- Yes, a printed index for Vol. 1, suitable for binding, may be obtained by mailing 10 cents to MINICAM Magazine. The Index also appeared in the Oct. 1938 MINICAM, page 68.—Ed.



Super Ikonta B



No "BLUR" in this Action

The ski-jumper was traveling fast directly across the camera field, but look! Stopped in mid-air, every detail sharp and clear. That's a Super Ikonta B for you. Its Zeiss Ikon range-finder focuses so accurately that the fast Tessar F2.8 lens can be used at full aperture when needed.

Moreover, the Super Ikonta B embodies the most advanced features to avoid error and to facilitate operation. Range-finder and view-finder are combined in one opening. Automatic picture counter. Automatic check to prevent accidental double exposure. All controls at fingertips. $2\frac{1}{4}'' \times 2\frac{1}{4}''$ square picture size is another convenience—no need to turn camera for upright shots . . . a good size for the album or for enlarging.

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Write for Literature

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728 South Hill Street, Los Angeles, California



Albada Sports Finder. Shows more of view than will be included in negative, with picture portion marked by white lines.



Contameter permits automatic focusing and sighting for extreme close-ups with camera in hand.

IT'S A "SNAP" WITH SUPERFLASH

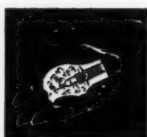


"Long Peak" Flash Cuts Exposure Errors

When it takes a flash to get the picture—you're sure to get the picture *easier* with Superflash! This super flash bulb gives not only a brighter, but a *longer* flash with extra "peak light." And those added split-seconds of "peak light" mean the difference between a poor flash picture and a Superflash shot that catches every detail . . . brings out full depth, roundness

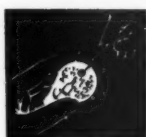
and quality in your photos.

Consider these outstanding Superflash features: Patented all-wire element; Controlled flash giving positive uniformity; Perfect synchronization; Longer flash "peak"; Patented safety spot protection; Smaller, handier sizes; Less current used—saves batteries. Say "Wabash Superflash bulbs" to your dealer—and be sure!



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Pioneer in baby-size flash bulbs . . . Each SUPERFLASH is 30% smaller than other lamps of comparable light output.



SAFER

Patented blue safety spot protects you . . . gives ready check on perfection of every SUPERFLASH bulb *before* you use it.

FREE!

COMPLETE POCKET EXPOSURE GUIDES. Ask your photo supply dealer for the new Pocket Exposure Guides listing all films and their correct use for flash pictures, flood pictures, color photography and home movies. Or write Dept. A-29 Wabash Photolamp Corp., Brooklyn, New York.

WABASH

SUPERFLASH . . . SUPERFLOOD



Wings

By THEODORE PETTIT

A MID A WHIR OF WINGS and an eerie birdcall, a Compur shutter clicks—and ensnares, forever, an image on sensitive gelatin. It is open season for snapshooters and every winged creature is a “game” bird. In city parks and far-off rural retreats, tame pigeons and man-wary waterfowl all succumb to the lure of food and the wiles of lensmen working by

remote control, in concealed blinds and with long, telephoto lenses.

The pageantry of flight—wedges of waterfowl against sunsets and dawns—wings bending to the wind—graceful birds dipping for food, scooping up morsels—all these pictures await capture.

Birds can hardly be “photographed”;

needle-sharp negative.

So much depends on chance that there will be more poor pictures than good ones. There is no question of sparing ammunition. Shoot first and think later. One swell bird shot out of a 36-exposure roll is a good score!

There is no time to think of focus, ex-



By ALLAN D. CRUICKSHANK

● Herring gulls, at sunrise, scouting for breakfast in the ocean flotsam. They are found in all U. S. coastal areas. Mostly well fed, they are the most approachable of all untamed birds. Peanuts, bread or other food can lure the seagulls, like park pigeons, to within a few feet of the camera. Exposure f4.5 at 1/150th second.

they're too fast for anything but to be “shot” with a camera which is raised to the eye, sighted and fired like a rifle.

The chief difference is that it is harder to score a camera hit—if by a “hit” is meant a satisfactory composition and

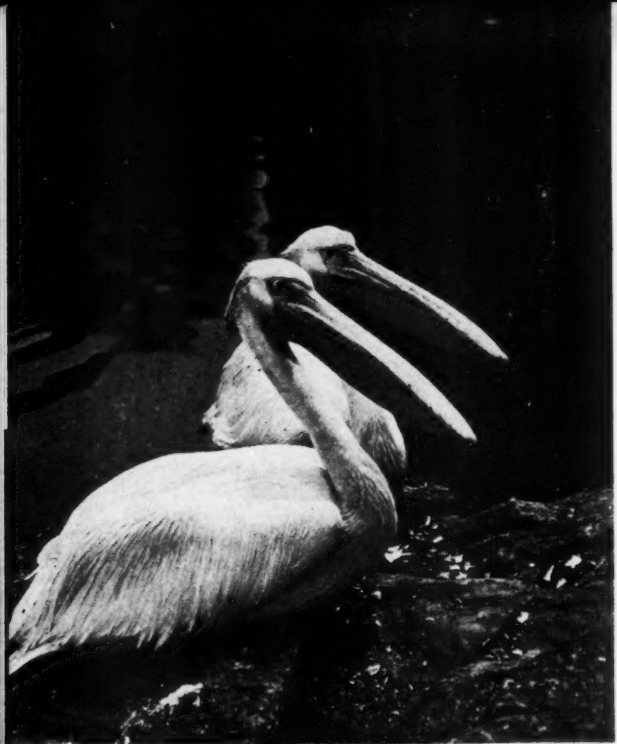
posure or composition. These important things must be pre-set.

Rule one is don't go after birds, but make them come to you. Select a “theatre of action” into which the birds can be



PINTAIL DUCKS

- Across a winter sky, swift-winged pintails move in the proud pageantry of flight, bending their wings to the wind. A shot to delight the pictorialist, he is careful, however, not to shoot into the sun in this manner unless clouds veil the sun. Exposure $1/200\text{th}$ at $f/11$, red filter. The sky was darkened around the margins of the print by dodging during enlargement.
- Pitching it on curved, motionless wings, a pintail descends for dinner—oblivious to a concealed lensman and clicking Compur shutter. Exposure $1/500\text{th}$ second, $f/3.5$. Photographs on this page by Paul J. Fair.



BIZARRE DUO By FRED CARISI

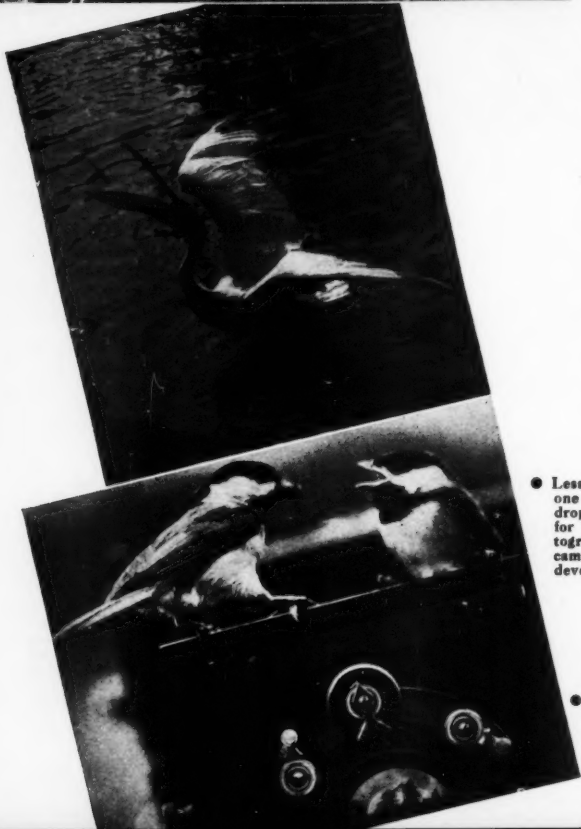
- Tame, city-bred birds (top) not only are easy of approach, but they like to group together — furnishing interesting compositions. When subjects are white, look for a dark background. This print won second prize in the Brooklyn Edison Club Exhibit. Zeiss Ikon camera, 1/80th second, f/11, S. S. Pan.

lured. Arrange for a background of sky, water or sand that will contrast sharply with the plumage of the subjects, one being predominantly dark and the other light. Determine correct exposure to use, focus lens on the "theatre of action," and you're all set. Woe to the image that comes into the range of your camera artillery!

Winter affords an especially good time to experiment with bird photography because cold and hungry birds are easily lured within camera range. They flock to suet racks or feeders containing raw peanuts and sunflower seeds. Waterfowl, such as ducks and geese, are lured by corn and bread thrown into the water.

The first essential to "shooting" birds is the what and where of your subjects. The local bird club can furnish directions to convenient birding spots. To lure the game

(Page 64, please)



- Less placid than the pelicans above, is the one at feeding time. Note the fish about to drop into the bird's maw. A supply of food for "model fees" is a necessary aid in photographing park animals. Zeiss Super Ikonta camera, Agfa Superpan film, 1/100th at f/9, developed in Edwal 12, 18 min. at 70°. By Frank Weinstabl.

- A couple of Carolina Chickadees (bottom), on a view camera, about to photograph the photographer, apparently arguing about what exposure to use.



- Hunting birds with flash is an exciting night sport. The barred owl, above, is found south of Virginia, and in most of the southern states during the winter months. Above taken near Jacksonville, Fla., one flash bulb, shutter on "time," f4.



- Black Skimmer, photographed from a blind, 1/500th at f5.6. Winters along the coast south of Virginia. Wild birds can be approached closely only by employing the technique of the hunter. This means that a telephoto lens, a knowledge of bird habits and an adequate supply of patience are required "accessories." Photographs from National Association of Audubon Societies, New York.

It Couldn't Happen

TO ME



● Hutchins at work arranging the model for the photograph on the following page. Snapshot by Charlotte Becker, f/2, 1/60th second, Agfa Ultra Speed film.

The personal story of a man who bought his first camera a year ago and today is one of America's leading amateur exhibitors.

By JOHN HUTCHINS

Photographs by the Author

IT all started with that birthday present. Miss Judith Russell, a young actress friend, wanted a camera for her birthday. I didn't know anything about cameras. Photographic bugs annoyed me. I had sometimes been obliged to sit for my own portrait and this bored me to distraction. However, with some misgivings, I hied myself to a neighborhood photo shop to buy a camera.

The man asked, "What kind of a camera do you want? What make?" "Oh, just some good standard brand," I replied. Well, he began to drag them out. He spoke a very strange language, all about F numbers, apertures, focal lengths and parallax, etc. I was completely flabbergasted. Well, I came back with a twelve-dollar-and-a-half camera under my arm.

I began to read the instructions. "Miss Russell will never understand this complicated contraption," I said, to myself. Although I was not at all interested, I de-

cided to study up a little on the subject of photography, so as to be able to explain to her how the little gadget worked.

The following day I bought a MINICAM magazine. I didn't know it then but I was already beginning to feel the slow, inexorable infection. From then on, things went from bad to worse. During that first week, she didn't even get to use her own camera, because I was still studying its workings and experimenting with it. Finally, she said, "Whose camera is this? Yours or mine?" So, before I hardly knew it, during the next week, I purchased a miniature camera for myself.

I was amazed by the speed and ease of handling of the modern instrument. Action pictures fascinated me. Normal view points seemed dull and uninteresting.

One day I took a snapshot of a cowboy out at the Lazy K Bar Ranch, in Wallpack Center, New Jersey. I think that changed my entire attitude toward photography,



THE NUN

● A few months after Hutchins started taking pictures, he discovered he was habitually moving closer and closer into the picture, eliminating various component parts, until after cropping in the darkroom, every picture he took ended up as a closeup. Finding his tendencies inclined toward portraiture, he from then on followed rather than fought his natural inclination. Exposure 2 seconds at $f/22$.

FIG. 1.

because someone criticized the lighting of his face. I told them that the light naturally fell that way. They explained I could have maneuvered him into a position where the lighting would have made

a better picture. I decided I needed some instruction. I joined the camera classes of the New York Camera Club.

"I hope I am not too far advanced for these classes," I told the man who took



JUDY

FIG. 2.

- Same model as in Fig. 1. Hutchins' first four months in photography were spent taking mostly outdoor pictures. Then he found his imagination worked best indoors and since that time portraiture has occupied most of his attention.



GENTLEMAN OF VERONA

FIG. 3.

● Costly costumes are not necessary for "period" portraits. The above costume was made of two pieces of black velvet. The hat band is a piece of gold braid, and the neck ruffles were obtained at the 5 and 10 store. The medallion is an authentic jewelry piece of an early century, which happened to be available and which inspired the entire composition. It is not necessary to venture far afield for subjects either, the above being the photographer's father. Defender XF Pan, f16 at 1 second.

my application. "How long have you been taking pictures?" he demanded. "Oh, about two months," I proudly replied. With a peculiarly indulgent smile, he told me that he didn't think their classes would

prove to be *too elemental* for me. *Boy, was he right!*

Two weeks later I joined the club and was amazed to find that the members were totally unimpressed by my remark-



THE FOP

● This is what Hutchins does to unsympathetic subjects. The neck piece is a doily swiped from a dining room table. Exposure 2 seconds at $f/16$.

● This is the shot which started an amateur photography career when critical friends told how it could be improved. Exposure 1 second at $f/16$. **BIG JIM TREE**

FIG. 4.

FIG. 5.



able angle shots and action pictures, which my friends had told me were so amazing and remarkable. The members' pictures looked more like paintings to me than photographs. I was bewildered by the constant usage of the expression, "print quality." What was this magic thing called "Print Quality?" I began to hear about composition, over development, under development, dodging, water temperatures, contrast, etc., etc., until I thought it was all too much, and I would give it up.

I did. I quit—for four days. Then I was back at it again. From there on I find it very hard to remember just exactly what happened, although all of that happened only less than a year ago. I can't remember just what I learned next. Things were happening too fast.

My pictures were bad, they got better, they got worse—ad infinitum. The members all helped me. They were unstinting in their attentions and never too busy with their own work, to answer my many questions. Four months later I made my first good picture. I was advised to send it to the Salon of Pictorial Photographers of America. I did. It was accepted and I almost fainted dead away. Instead of devoting four hours a day to photography, I found myself now doubling the time.

I am a director and dramatic coach by profession. It has been my privilege to teach such stars as Ginger Rogers, Cary Grant and Joan Crawford. Naturally human expressions and emotions are part of my business. Faces fascinate me.

In taking pictures, I discovered that I would start on a hilltop to take a landscape and gradually move closer and closer into the picture, eliminating its various component parts, until after cropping in the dark room, my picture was a close-up, an enormous head of a goat for instance, and I found myself looking for skin textures.



THE DAUPHIN

FIG. 6.

- Learning how to make a good print in the darkroom teaches how to light a picture in the studio. The costume jewelry in these pictures is authentic. In the photograph above the wig was purchased for \$2. The rest of the props for these period portraits were assembled from odds and ends and the same props used over and over again for various pictures by merely rearranging ruffles, pieces of velvet, etc. Exposure 1 second at f/16.

Finding my tendencies to be thus inclined towards portraiture, I have followed rather than fought my natural inclinations.

Every succeeding portrait that I made showed improvement. However, my landscapes and still lifes did not improve
(Page 70, please)

Exposure Meters, II

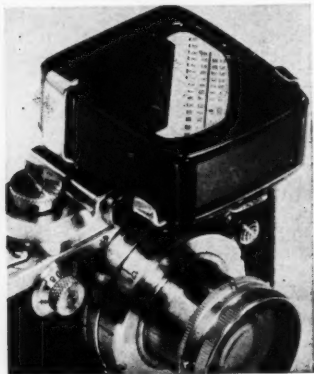
For good pictures, correct exposure is the number one requirement. Here's how to select a photoelectric meter and how to use it.

By RICHARD F. GREY



● Incorporated in the new model General Electric meter is the single-arc scale, previously available as optional.

HOW a photoelectric meter works and how to obtain perfectly consistent results with it are profound mysteries even to many long-experienced photog-



● The Photrix attaches to the camera view-finder bracket of a Leica (as above), or any other camera equipped with a view-finder bracket, by means of the Photrix adapter. A new model has recently been announced, the Photrix S. S.

raphers. This is surprising in view of the simplicity and importance of the subject.

A photoelectric meter gives an accurate, mechanical measurement of illumination and requires no optical or mental calcu-

lating. The meter depends on the operation of a light-sensitive cell; when pointed toward the subject, a needle moves, indicating the amount of light and correct exposure to use.

The choice of a meter depends on the conditions of illumination to be met, whether pictures will be taken under dim light, whether direct or indirect readings are desired, whether the meter is also to be used in enlarging, and whether the shutter and lens stops on the meter correspond generally with those on the camera to be used with it. Last, but not least, is the necessarily important consideration of price.

Meter sensitivity and price are closely related, the more costly meters having the greatest sensitivity. Good performance is obtainable from any photoelectric meter under conditions of brilliant illumination. But in dim light the more costly meters show greater response.

Three photoelectric meters were tested to see which would respond to the least amount of light. To produce a readable deflection of the needle, the low-price meter required twice as much light as the more expensive one, and four times as

much as the more expensive amplifying-cell type.

The most common error in the use of an exposure meter is improperly pointing the light sensitive cell at the scene. The reading should be taken from the most important object.

For long shots, the meter may be used from camera position or from a distance in front of the camera. The meter's angle of view is wider than that of the normal camera lens, and getting closer to the subject permits the meter's angle of view to be limited to the area taken in by the camera.

Direct reading meters must be adjusted to the known or chosen factors *before* reading. Indirect may be read and the adjustments and calculations made afterward.

With the necessary preliminary adjustments, the meter is held so that the cell points toward the subject, when the needle will indicate the reading. The essentials of meter operation are:

1. Outdoors, point the meter slightly downward to prevent radiation from the sky producing an over-reading.
2. The meter must be in line with the camera, and not off at one side where the reflection factor may be quite different.
3. The meter must be held sufficiently close to



● If a large area of sky is included, the meter is pointed downward to include only the landscape and not the sky in its field of view.



● For closeups and portraits, the meter is brought to within a foot of the subject.



● The Weston meters. Top, the standard (650) model with computing dial. Lower left, Junior model with bell form "dial." Lower right, the older Weston model, with double-range button on its side. The Cine (819) model is the same as the 650 model in shape and price.

- When there is not enough light to furnish a reading, use a white card about two feet wide, and multiply the resultant reading by 16. That is, increase exposure four full stops. If the reading from the card indicates $f/11$, correct exposure for an average subject would be $f/4$.



MODERN EXPOSURE METERS

	Price	Aperture Range	Shutter Speed Range in Seconds; Cine models in f.p.s. (frames per second)	Emulsion Speed Range	Size in inches	Case
Avo	\$24.00	f/1 to f/32	60 to 1/1000 sec.	H & D 200 to 5,000	2½x2½x1	Leather
De Jur Amasco....	\$10.50	f/1 to f/32 (20 stops)	60 to 1/1000 sec. (31 speeds)	Weston .3 to 200 (19 stops)	2½x2x¾	Leather
Electro Drem	\$18.00	f/1.4 to f/32	8 to 96 f.p.s.	Sch. 15° to 30° (6 stops)	1½x2x2¾	Leather Spring-out Case
Electrophot	\$10.00	f/1.4 to f/22 (12 stops)	4 to 1/1000 sec. (12 speeds)	Sch. 11° to 29° (18 stops)	2¼x1½x¾	\$1 extra
Eos	\$13.75	f/1.5 to f/25	120 to 1/1000 sec.	Din 6/10 to 21/10 Sch. 17° to 26°	2¼x2½x¾	Leather
General Electric ..	\$19.50	f/1 to f/64	60 to 1/1000 sec. (44 speeds)	Weston 3 to 128 (11 stops)	1¼x2½x2½	Extra
Horvex	\$21.50 (Amplifier Cell, \$12)	f/1.5 to f/22	240 to 1/3000 sec.	Din 7/10 to 22/10 Sch. 16° to 26°	2½x2½x¾	Eveready, \$1.50 extra
Horvex Cine.....	\$21.50 (Amplifier Cell, \$12)	f/1.5 to f.22	8 to 64 f.p.s.	Din 7/10 to 22/10 Sch. 16° to 26°	2½x2½x¾	Eveready, \$1.50 extra
Mini Photoscop..	\$14.75	f/1.4 to f/32 (14 stops)	60 to 1/1000 sec. (17 speeds) (also f.p.s.)	Sch. 14° to 29° (6 stops)	1½x2¼x2½	Eveready
Photoscop	\$22.50	f/1 to f/45 (25 stops)	30 to 1/1000 sec. (15 speeds) (also f.p.s.)	Sch. 14° to 29° (15 stops)	1x2¾x3	Leather
Photrix	\$16.00	f/1 to f/45	60 to 1/1000 sec. (16 speeds)	Weston 3 to 200 Sch. 14° to 32°	2¼x2x13/16	Eveready
Photrix S. S.....	\$17.50	f/1 to f/36 (22 stops)	60 to 1/2000 sec. (17 speeds)	Sch. 14° to 32°	2½x2¼x1½	None
Tempiphot	\$20.00 (Amplifier Cell, \$12)	f/1.5 to f/22	240 to 1/3000 sec.	Sch. 10° to 29°	4x2½x¾	Leather
Weston 650	\$22.50	f/1.5 to f/32 (27 stops)	100 to 1/1200 sec. (52 speeds)	Weston 1 to 250	4x2x1½	Extra
Weston Jr.....	\$15.50	f/2 to f/32 (19 stops)	60 to 1/1000 sec. (28 speeds)	Weston 0.7 to 250	2¾x2¼x1½	Extra

FILM SPEED RATING SYSTEMS

Approximate Conversion and Comparison

Exposure meters made in the U. S. usually employ the Weston system, in which doubling the rating number means doubling the speed. For example, a film rated at Weston 32 is one full stop faster than a film rated Weston 16.

Photoscop numbers coincide with degrees Scheiner. In this system, increasing the number by three doubles the speed. For example, 24° Scheiner is twice as fast as 21°; and 27° is twice as fast as 24°.

The above table is for U. S. ratings.

European film ratings are two full stops higher. That is, a film that has a European film speed rating of 24° Scheiner really has a speed of but 21° Scheiner by American standards.

Weston	Degrees Scheiner	Din	Hurter & Driffeld (H & D)
4	15°	8/10	190
5	16°	9/10	240
6	17°	10/10	308
8	18°	11/10	390
10	19°	12/10	500
12	20°	13/10	636
16	21°	14/10	800
20	22°	15/10	1050
24	23°	16/10	1300
32	24°	17/10	1700
40	25°	18/10	2100
50	26°	19/10	2700
64	27°	20/10	3500
80	28°	21/10	4400
100	29°	22/10	5600
128	30°	23/10	7200



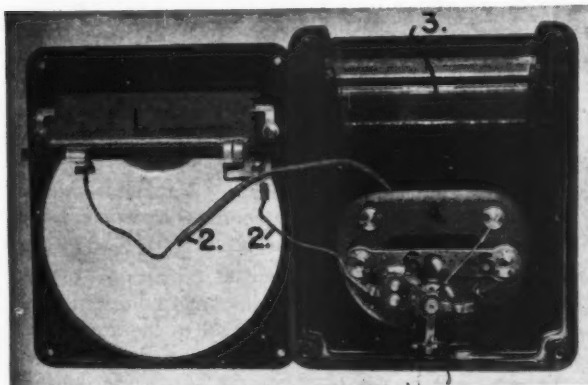
- These meters are noted for their convenience and low price. The DeJur Amsco (center) comes with a zipper carrying case and sling. The Mini Photoscop is higher in price than the other two, but comes in a leather eveready case.

the subject so that the subject fills an angle of forty-five degrees. A reasonable rule is to hold the meter at a distance twice the narrow dimension of the subject. For a medium shot this is about five feet. A human figure is read at about two or three feet, a face at about a foot.

4. If no reading can be obtained, (a) press the multiplier button, or (b) open the mirror window, or (c) re-

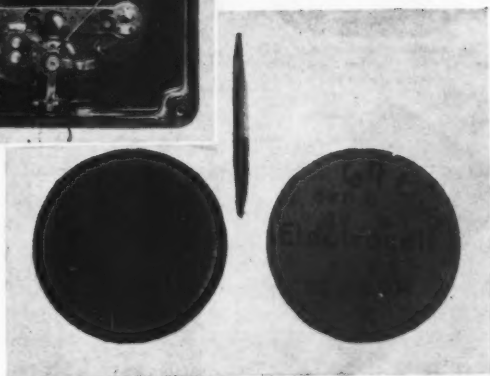
move the cell cap, or (d) add the amplifying cell.

Many of the new meters now appearing on the market are designed to operate with the minimum of manipulation on the photographer's part. When the meter is pointed to a scene, the needle points to correct exposure to use. This is the direct reading type. The known chosen factors such as film speed and shutter or lens



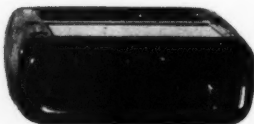
- Inside a photoelectric meter.
(1) The photoelectric cell; (2) the wires leading from the cell to galvanometer movement; (3) a mirror which intensifies the ground level light; (4) permanent magnet; (5) indicating needle; (6) the rotating coil which actuates the needle.

- The "magic eye," or photoelectric cell itself (right) is hardly prepossessing in appearance. It looks like a disc of rusty iron. The essential parts of a photoelectric meter are a photoelectric selenium cell such as the thin disc shown here, and a sensitive galvanometer to measure the amount of electricity generated when light reaches the cell.





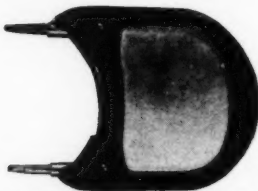
- Increased accuracy and versatility is obtained in the Horvex by means of an auxiliary cell.



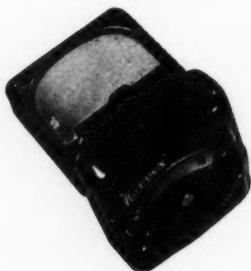
- End view of the Horvex (above) showing the mirror closed for use in bright light. The illumination registered passes through a narrow slit.



- Opening the mirror (above) gives a greater reading in dim light.



- The auxiliary cell (price \$12 extra) for further amplification (above).



adjustments are made *before* the reading is taken.

In the indirect type, these calculations are made *after* the reading is taken.

Direct reading meters are designed for maximum simplicity and speed of operation.

In indirect reading meters, the dials are designed for differential exposures indicating the latitude range of the film, the limits of under and over exposure, and allowances for light and dark subjects. These factors can safely be ignored by the beginning photographer, but they are important to the experienced one.

The Weston standard meter and the General Electric are familiar examples of the indirect reading type.

These two are domestic products as are also the Electrophot and De Jur Amsco. The latter is one of the most recent arrivals on the U. S. market.

Among the most sensitive meters is the Horvex with the amplifying cell attached. This meter, because of its cell angle, may be used beneath the lens of the enlarger for approximate exposure readings. The Tempiphot also makes use of an attachable amplifying cell.

See page 24 for a table of exposure meters, with their prices and various characteristics.

"Push-button" meters which read ten times as high when a button is pressed (as in very dim light) have a resistance coil to use up 9/10 of the current. This coil is thrown out of the circuit when the button is pressed. Other meters, like the Tempiphot, have a metal shield which covers the cell except for a very small circle. A meter such as the Horvex or G. E. has a cell cover with small slots. When this cover is in place the amount of light received is cut down proportionately. In such meters a double scale is provided to provide a reading with the cover either open or closed.

The operation of a photoelectric meter depends on the peculiar effect of light on selenium, a mineral related chemically to sulphur, and which conducts electricity more readily in the light than in the dark.

When selenium, or a compound, is coated on iron, an electric battery is created. The amount of current generated is very small, but is proportional to the amount of light shining on the selenium. The amount of this current can be measured by means of a galvanometer, a delicate instrument for measuring electric current.

It is the needle of such a galvanometer that you watch when taking an exposure meter reading of a scene.

The various film speed rating systems permit no accurate mathematical conversion. Standardization, some day, will

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- The Horvex meter with the amplifying cell attached. The right-angle position of the cell adapts the meter for negative integrating in the enlarger. The Tempiphot meter also utilizes an amplifying cell.

"No Grain" Negatives

Physical development, and how to use it for negatives of high quality as well as fine grain.

By HERBERT C. MCKAY, F. R. P. S.

PHYSICAL development is the reply to the prayer for negatives of the finest possible grain. It is, in effect, a method of silver plating upon a negative. The grains of silver deposited in this manner are so small and evenly distributed that 20-diameter enlargements may be made as a matter of course. It is easy to see what this means when extreme enlargements are wanted from a small portion of a negative, for exhibition prints, or for photo murals.

Fine grain is but one of the advantages of the physical development process. It gives a gradation scale proportional to the contrast of the original subject, provides clean cut resolving power, and demands no increase in exposure.

Physical development is a new and sensational process to many, but it has been known for many years. "Why isn't it universally used?", is then a natural query.

There are three answers to

the question. (1) It is totally outside the conventional developer type-class, therefore habit and tradition are against it. The use of hypo in a developer perhaps frightens off some would-be experimenters. (2) It is so unfamiliar that it is regarded as being necessarily a mysterious and difficult thing to handle. (3) It does demand exactitude.

No more difficult to use than chemical development, physical development is a process in which the silver which is to make up the image, is derived from the solution used. In chemical development, of course, the silver is formed by the reduction of the silver bromide already contained in the photographic emulsion.

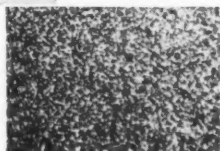
Physical development cannot be performed with tanks or reels of metal. Heavily chromium plated appliances and those made of a truly stainless steel are perfectly satisfactory. Unfortunately, some steels recently introduced for photographic use are not stainless. Hard rubber, bakelite and other plastic materials are always safe.

The process consists of six steps instead of the usual four.

- (1) Presoaking in water.
- (2) A preparing bath or forebath.
- (3) Development.
- (4) Rinsing.
- (5) Fixing.
- (6) Washing.

The last three steps are conventional, the usual acid-hardening hypo bath being used. The one point in fix-

● A light grey area (top) and photomicrographs of negatives by chemical development (center) and physical development (bottom). Under the microscope, physical development is revealed as far from the "no grain" ideal claimed by some advocates. Physical development, however, does produce a uniformity and evenness of grain structure that permits enlargements to be made without apparent grain in the finished print.



PHYSICAL DEVELOPMENT

The solutions needed are:

FOREBATH:

Potassium iodide 80 grains
Sodium sulphite, anhydrous 195 grains
Water, to make 16 oz.

DEVELOPER: *Silver Stock Solution:*

Sodium sulphite, anhydrous 1 oz., 300 grains
Silver nitrate crystals 120 grains
Fresh hypo crystals 2 oz., 300 grains
Water, to make 16 oz.,

Working Developer:

Concentrated silver stock solution 3¼ oz.
Water, to make 16 oz.
Amidol, dry 12 grains

Note that hypo is one of the constituents of the developer.

Physical development may be carried on in either tank or tray, provided no metal is present. Stainless steel and heavy chromium plated materials are perfectly satisfactory. Glass, hard rubber and other plastic materials are always safe.

ing is that this requires more time than after chemical development, largely because practically all of the original silver salt has been rendered less soluble. The time required in a fresh bath is about twenty minutes, but with older hypo this time may run as high as forty-five minutes.

The hypo should be fresh. That is, the crystals should be glassy-clear and colorless. Hypo which is opaque white or even translucent should not be used, because, for any given weight, the actual amount of hypo is *greater* than in the fresh salt. Too much hypo keeps the negative thin.

Amidol should be fresh and mixed into the silver solution not more than ten minutes before use.

The mixing of the silver stock solution is important. The entire amount of sulphite is dissolved in 8 ounces of water. Dissolve the silver nitrate in 7 ounces of water. The appearance of discoloration, or cloudiness at this point indicates the presence of some metal or other foreign substance. Discard the contaminated solution and start over again.

If you use perfectly clean glass utensils (including the stirring rod) the silver nitrate solution will be clear and colorless.

Add the silver solution to the sulphite. The whole solution will turn milky and flocculent curds may be seen. Stir the

solution until *all* of this milkiness has been dissolved leaving the solution clear again. The hypo crystals are now added and the whole stirred until the hypo is thoroughly dissolved. Filter through cotton, using a glass funnel. As the solution is stable it may be kept in a colorless glass bottle, although the consistent use of brown bottles for photographic solutions is a factor which has always been advocated by the writer.

To make up the actual developer, add the silver stock solution to water to make up the designated quantity. Then add the amidol and stir until completely dissolved. It is advisable to again filter the developer before use.

We are now ready to consider the actual development of the film. This is best considered in step-by-step outline.

1. Load tank in usual manner. (No metals in tank or reel.)
2. Fill tank with cold water and empty.
3. Pour in forebath. Allow to act for 3 to 4 minutes.
4. Pour off forebath into brown bottle. (Use for 6 to 8 films).
5. Rinse film in two changes of clean water.
6. Pour on developer, maintain temperature between 65 and 68 for 25 to 30 minutes. Agitate every few minutes. Lack of agitation will cause streaks.
7. Pour developer down the drain.
8. Rinse in cold water.
9. Fix 20 to 45 minutes. (20 in fresh hardener-hypo.)
10. Wash and dry in usual manner. At time of removal from hypo mop off all surface scum of free silver with wet cotton.

Some workers do not remove the silver scum until washing is complete. However, this scum sticks somewhat to the emulsion so that thorough swabbing at the beginning and at the end of fixing is a precautionary measure well worth while. Dried scum accounts for the "stains" of which many amateurs complain in connection with physical development.

If the completed negative is too thin,
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- A twenty diameter enlargement from a negative of about this relative size:

- Grain always is most apparent in areas of medium gray tone such as sky or snow. Despite the blowup, grain is hardly noticeable here. Exposure f11, 1/100th second, Pan film, yellow filter. By Riccardo Moncalvo.







APACHE

By JOHN HUTCHINS

- Newcomers to photography are capturing the field! The print above, one of the most successful at the New York Salon, was made by a man who started taking pictures only a year ago. What is more, the picture was conceived, exposed, printed, mounted and submitted to the judges all within five hours before the deadline. A studio portrait, it was made on a 5 x 7" Defender X-P Pan film, using a 19 inch Achromat (telephoto) lens. Exposure f38, at 1 second, with three Mazda lights. The final print was made on Kodabrom developed in Glycin.

● The trend is away from nudes. Only five figure pictures were hung at the New York Salon. Does this mean the end of a period of experimentation with spectacular and modernistic photographic treatments of the human figure?

NUDE

By ROBERT E. MARTIN

By HENRY CLAY GIPSON

*Illustrations from
The New York Salon of Photography*



Where is

PHOTOGRAPHY GOING?

Even while pictorial work dominates, there is the influence of newspaper and picture magazines demanding "Pictures that pack a punch."

WHAT is the trend today in amateur photography? What subjects are attracting U. S. lensmen and how are they treating them? What kinds of cameras and equipment are being used? What is the goal and what is the direction of the effort being expended by thousands of camera users?

These are important questions for no one expects photography to be the same this year as it was last year and the year before. Only stagnant things remain stationary. And photography is too large and too new, too all-embracing and too important to cease moving. Photography

is a vital, dynamic force for more people in this country than it ever was before.

A partial answer can be found in a salon such as the recent New York Salon of Photography held at the Camera Club of New York City. More than 10,000 people viewed this exhibition, more visitors for a single exhibit than the Camera club has known 54 long years of venerable history! Many of the visitors were taking in their first salon! New converts to the ranks, they represent new blood coming into the photographic field.

No one denies interest ascending. The quantity is there. But how about the

quality? The visitors were not given psychological tests, but it is worth noting that the Club because of its traditions, and because of its location, tends to attract mostly the more serious devotees. The Club is not in the Times Square district where tourists, curiosity seekers and everyday lookers-on drift in. Those who seek out an exhibit in the Club's quiet second story hall do so with a definite motive, and an interest in photography's highest aims.

What did they see?

The salon, limited to the U. S. and Canada, attracted entries from 23 states, Hawaii, the District of Columbia, and three Canadian provinces.

The first impression was the increase of human interest material. But just exactly what is a *human interest* picture?

Art, and photography, in its highest and

most abstract expression, considers form above all, and subject matter is secondary to treatment. A pictorialist often thus selects a camera subject which is not especially interesting in itself. His concern is not about the subject, but about how to portray it.

To the "human interest" photographer, however, it is subject matter that comes first. Children, animals, a familiar street, a well-known uniform, objects in motion—these are the subjects that everyone recognizes and enjoys, and these are the subjects which contain human interest.

The abstract artist would arouse and stimulate our imagination. He stirs the mind. The human interest lensman works on our memory. He arouses the heart. The

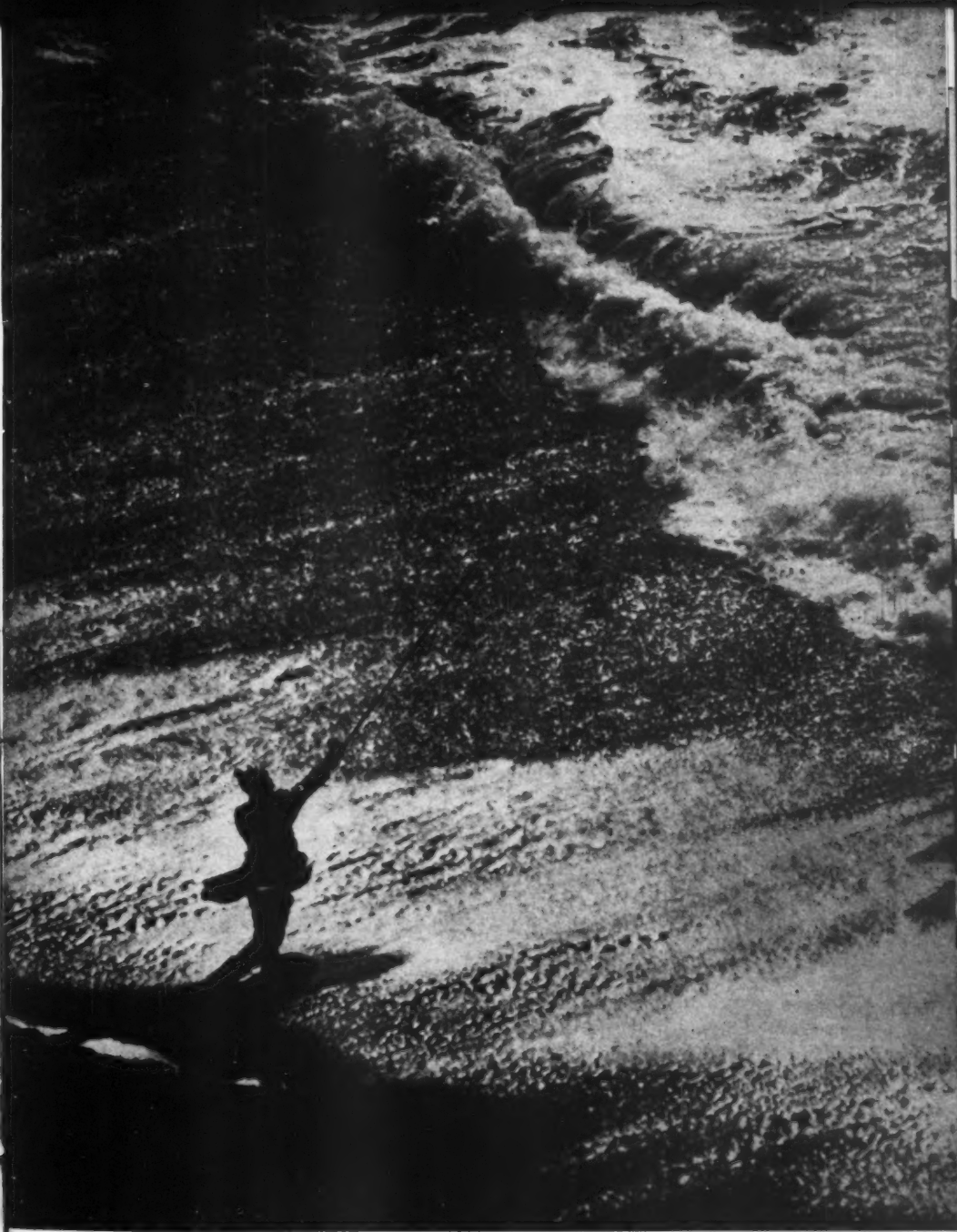
(Page 74, please)



COUNTRY HARMONY

By JOHN H. VONDELL

- Classical painters, in grouping figures, maintained that odd numbers make the best arrangements. They preferred groups of 3, 5, 7, etc., figures. The same law holds good in photographic compositions. Exposure f5.6, 1/100th second.



MAN AGAINST THE SEA

By C. W. EDDY

- This is the kind of composition that "stops 'em". Not only is there the implied motion of the fisherman and of roiling waters, but also the larger and more dramatic concept of a human figure lost in nature. The man appears to be as insignificant as any grain of sand on the beach, and at the same time he is the most important part of the composition—there would be no picture without him. The texture apparent in the 14 x 18 blue toned print is due to the graininess of the negative—a case where coarse grain helps.



• A miss. The matador's sword, aimed to cleave between the shoulder blades and pierce the heart, has missed its mark by inches. While the crowd hisses, the swordsman will try again. Photo Michel Graner. Exposure 1/100th, f/9.

By JACK B. PENFOLD

To new-world lensmen, an old-world sport brings camera subjects excelling in speed, grace and power.

IN most sports the rule is "Keep your eye on the ball." In photographing a bull-fight, however, the rule is "Don't keep your eye on the bull."

If you have ever photographed a bull-fight, if you have ever watched a *matador* pass a bull so close the buttons were ripped from his shirt, you will never rest until you have another try at it. You'll be going back after those shots you missed, the ones which were too fast and sudden for you.

A bull-fight, strictly speaking, is a *corrida*, or fully, a *corrida de toros*. It has its formalism, heros, devotees and special

newspaper writers. To thousands of Latin Americans, who alternately cheer and boo at the exploits of the arena, bull-fighting is the equivalent of our football, basketball and baseball all rolled into one.

To any cameraman, the sport is a standing challenge for trigger-finger speed.

First of all do not expect a lot of gore. This is not an important part of the sport although in some arenas, such as the great bull ring of Lima, Peru, several horses are allowed to be gored at each session. The *picador*, horse and all, may be picked up by a bull on one of his horns. If the protective padding on the horse is

pierced or evaded by the bull, the horns pierce the horse's chest like paper.

Secondly, concentrate mostly upon the man—when he moves you can usually figure on the bull having at least two feet off the ground.

Thirdly, press the button that split second just *before* the action takes place. It is concerning this rule that I ask to offer assistance.

The game always starts off with the Grand Entrance. The field is then cleared leaving only those who will work the bull with capes. Do most of your shooting when the cape man and not the bull is facing you.

The man will jiggle the cape to tease the bull into charging. Watch that cape. As the bull, or toro, is led along by the cape just in front of his nose he becomes excited and when the cape is swung into the air at the end of the pass the animal follows it. The instant the toro tosses his head into the air after the cape—SHOOT.

- (Top) Playing the bull with his cape, the fighter works to learn the animal's habits.
- Whoops, he got it! The bull fighter feels pretty sheepish when his quarry runs off with the red cape.
- Shot at 1/250th of a second, the man is shown with both feet off the ground as he fires his *banderillas* into the animal's thick neck. The gaily-colored barbs are intended to further enrage the bull.
- Sometimes a bull defies tradition and goes for the man instead of the cape. He seldom is seriously hurt as the other fighters rush in waving their capes to distract and draw off the animal.





● The enraged bull lifts horse and rider off the ground! The *picador* tries without success to keep the bull off with a long, spiked pole. Despite the padding on the horse's sides, many of the animals become gored to death. Contax camera, 135 mm. lens, 1/250th at f/4, Agfa Superpan Supreme film. By Jack Penfold.

● A news photographer covering the bull fight from a little crow's nest, just on the inside of the ring. He looks bored as he contemplates the slain bull. The *banderillas* sticking in the animal's powerful neck cause only surface wounds calculated to enrage him. Death comes from the *matador's* sword to the heart. To take no chances with the animal, a *coup de grace* is about to be administered by means of a short dagger thrust to the base of the brain.

Your picture will show the cape swing gracefully into the air with the bull straining up after the cape with both front feet off the ground.

Next comes the man on horseback, called the *picador*, the "teaser." Heavy quilting covers the horse's right side, and the horseman will keep the unprotected side towards the fence enclosing the bull-ring.

The *picador* is armed with a long steel-shod pike; he teases the bull into charging then tries to hold him off with the pike. The man may not be able to hold him away. Watch the horse's feet. SHOOT at the moment of impact between horse and bull; sometimes both horse and horseman are hoisted two feet into the air.

After the "hit", transfer attention to the horseman. The shock of the bull hitting the pike sometimes un-





● A pair of mules gallop off with the carcass of the fallen gladiator. He will be cut up for steaks—the toughest steaks in the world. The above was taken at the bull ring of Lima, Peru, the largest in the western hemisphere, but much smaller than modern football stadiums. Exposure 1/200th at f/4.5.

THE LAST ACT

By ELIZABETH HIBBS

seats the horseman and the rearing horse finishes the job. Immediately he is surrounded by men with capes ready to distract the bull's attention.

Next in line comes a man armed with long barbed sticks, the *banderillas*. He will attempt to pin them into the thick tough hide protecting the bull's shoulders. By various passes he will entice Senor Toro to charge; as the man lifts himself on his toes, catch the barbs in your finder and follow them as you tighten a trifle on the shutter release.

When you see the steel points reach for the bull's shoulders—SHOOT. Your picture will show the man with both feet off the ground, his body will be bending over the animal's horns from the front and so close that you fear he will be tossed sky high.

If it is a strip of the action you want, do not attempt to get the pinning of the barbs and the man's escape in succession. Wait until the next man comes; bide your time until you see his hands leave the ends of the *banderillas*. By the time the trigger is pushed, the man will be in the

air, both arms flung widely to help his leap beyond those horns reaching to mangle him.

Finally comes the *matador*, "the killer" himself.

He is an expert in dodging, last-minute side-stepping and split-second timing. You will see more fast footwork than in a boxing match and more graceful movements than on a ballroom floor.

Watch this man's every move. He will take all kinds of chances just to give the crowd a thrill. One *matador* gets down on his knees in front of the bull to show his indifference to death and his dominance over the bull.

If you want to shoot the actual execution of the bull, watch for the swordsman to rise on his toes with the steel blade aimed at the animal. As the *matador* lifts his right foot, tighten on the shutter release—you'll have to work fast.

As a right foot suddenly lunges forward—SHOOT. If it is a clean lunge, the sword will reach its mark before the right foot hits the ground!

(Page 72, please)

- An Indiana state officer focusing one of the 200 new, specially-designed view cameras which have just been put into use. Highway patrolmen now must be expert marksmen with this camera as well as with a revolver.

By DON F. STIVER
Superintendent
Indiana State Police



Cameras for Cops

For police, in the war against
"sudden death"—a new weapon!

TWO hundred members of the Indiana State Police Department have just been given specially-designed cameras and sent out with their new weapons to war on "Sudden Death" on our highways.

Faced with the absence of proper records to study accident causes, this department found it difficult to map out a plan of accident prevention. Handicapped by untrained witnesses and perplexed jurors who occasionally had to choose between the testimony of an officer and several occupants of a wrecked automobile, we have turned to photography.

Equipping our entire force with cameras—the type that we wanted to purchase—was financially impossible. So R. F. Borkenstein, chief laboratory technician, was called into conference. He designed a



- "Photography will make Indiana highways more safe," says Don F. Stiver, superintendent of Indiana State Police.

special camera—one that would suit our needs—and pocketbook.

As far back as last summer, the department was working on plans for equipping each unit with photographic equipment. The original method of having free-lance photographers make pictures of accidents failed because the photographers were often busy on other jobs and frequently so far from the scene that we could not permit the highway to remain blocked until a photographer arrived.

For the same reason, the plan of having official photographers at each of the various State Police posts failed. Often the wreck would occur more than a hundred miles from the barracks. On other occasions several accidents were reported at the same time, in opposite directions from the post.

This left one alternative—make every patrolman a photographer. So we started sending our men to school—even before we had cameras for them to use.

Each officer already has received courses in photographic theory, taught at



● Armed with cameras and tape measures, a class of forty state policemen converge on the scene of an accident to record the mishap in a campaign to determine the causes of highway crashes. The three pictures below are but part of a series of photographs made of one accident. The top one shows the truck on the left side of the road, and its skid marks; the center, the effect of the head-on collision, and, bottom, the passenger car's position. Photos by the police camera, Pan film, 1/25th second at f11.

Indiana and Purdue Universities by laboratory trained instructors. Photography was included as an important part of accident investigation. One week's field training was included following courses at each school.

At one time, after the rookies of the photo class had waited nearly a week (in a region where accidents were usually frequent occurrences) without a real crash for practice work, they were notified of a minor accident on a nearby highway.

Imagine the astonishment of the farmer whose vehicle had skidded into a ditch, to see the entire squad of police swoop down upon the scene armed with cameras and tape-measures, to make pictures, check distances and conduct their investigation.

Designing the police camera was up to R. F. Borkenstein, chief technician of the Indiana State Police Laboratory, and it was no easy task as anyone can readily imagine. The first limitation was one of cost, which was limited to \$6,000. That is a nice sum to spend for camera equipment, but divided into 200, the number of cameras required to equip the department, only \$30 per camera was left.

This eliminated any roseate visions of a neat and handy little miniature camera with its many well-known advantages. Nor was the police laboratory equipped with the high-precision machinery needed to accurately assemble a device that is not much



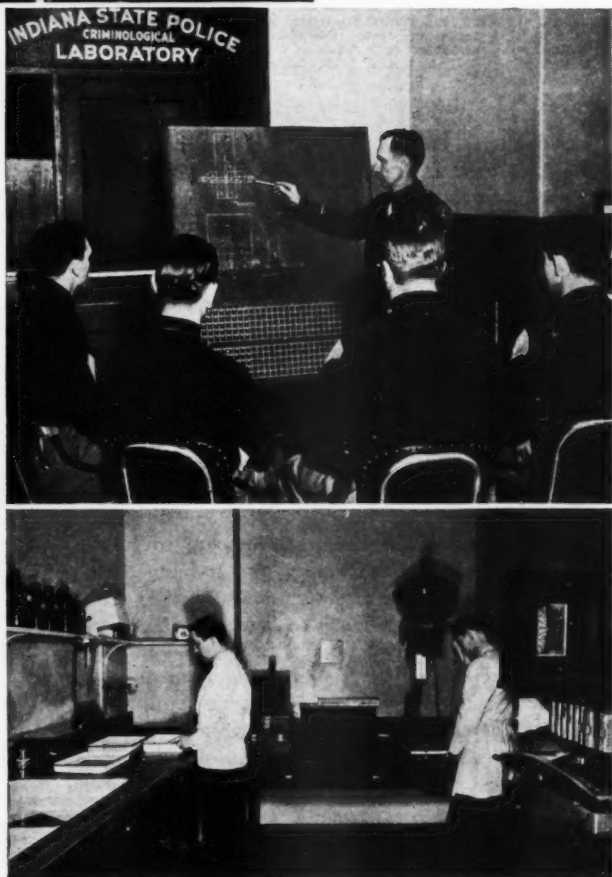


- (Top) With lensboards, shutters, viewfinders, racks, other parts spread before them, officers assembled the 200 new cameras in the criminological laboratory of State Police headquarters at Indianapolis.
- (Center) The locking device on the camera's track is explained to the photography class of the State Police by Lieut. Don L. Kooker, head of the Laboratory Division of Education. Kooker, former F. B. I. agent and a member of the famous "Secret Six" which aided in the clean-up of Chicago, is one of the strongest supporters for police use of photography.
- (Bottom) The State Police Laboratory at Indianapolis, and the seven posts located at various points in Indiana are equipped with darkrooms such as this one. Here R. F. Borkenstein (left), who designed the department's new camera, is at work before the trays of developer, short-stop and hypo, while another technician operates the enlarger. At the lower right is a print dryer, while a contact printer and light-tight box for printing paper is seen on the table in the center of the picture.

larger than and certainly as accurately put together as a fine watch.

Perhaps the first requirement for a traffic patrolman's record making camera is depth of focus. This was obtained in the new police camera by means of a well-known accessory—a tripod. As patrolmen travel in automobiles, the size and weight of tripod and camera are not critical considerations. As the camera's subject usually is as stationary as only a wrecked car can be, the cop-photographer has plenty of time to set up a tripod, stop down the lens for depth of focus, and allow an exposure several seconds long if need be.

Because the police camera was for use on motionless subjects,
(Page 85, please)



MINIATURE PHOTOGRAPHY

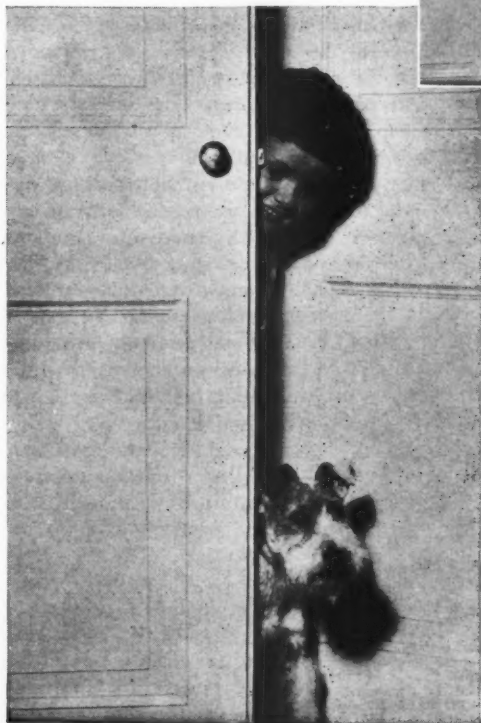
As a System

What is the advantage of standard 35 mm. equipment for the beginner? For the advanced?

By H. M. BROWN

With Illustrations by ARGUS

- Relative size of contact print (right) and enlargement (below) from 35 mm. negative. The Argus Speed Printer produces prints this size ($2\frac{3}{4} \times 4\frac{1}{4}$).



MINIATURE photography with a candid camera is more than merely making small negatives with a compact instrument — it is a new and better way of taking pictures—it is a complete system of photography in itself.

This system of taking pictures has been called *miniature* photography because the negatives from which the final prints are made are comparatively very small. A true miniature negative is not only very small, but so sharp and clear in definition that enlargements made from it will compare favorably in quality with prints made from large negatives by the contact printing process. This means, of course, that the miniature camera itself and the film used in it are of smaller dimensions than usual, but when we speak of miniature photography we do not refer to the size alone.

The system of miniature photography actually involves a number of elements in addition to the miniature camera; the use of inexpensive 35mm. motion picture film; the use of a fixed focus projection printer or an enlarger; and a projector

for showing positive transparencies in black and white or full natural color.

Let's analyze these elements. The true miniature camera must be so precise an instrument that it will make microscopic negatives from which full-size, perfectly clear prints can be made.

To make these tiny, exquisitely sharp negatives and to take advantage of this new way of picture taking called *miniature photography*, cameras should incorporate the following essentials: (1) a high speed lens, (2) a lens capable of giving extremely fine definition, (3) a high speed shutter, (4) the use of inexpensive 35 mm. motion picture film.

One popular camera of this type is the Argus Candid camera. The models A, AF, C and C2 are miniature cameras which include all the above listed features.

The system of miniature camera photography to be described here may be applied with whatever camera the reader may have. However, in order to be as specific, and as unified as possible, this article will limit itself to one manufacturer's line, and Argus illustrations will be used.

Much of the popularity of miniature photography, as well as the utility of the camera itself, has been built around the versatility and economy afforded by the almost universal adoption of 35 mm. film. Amateurs have



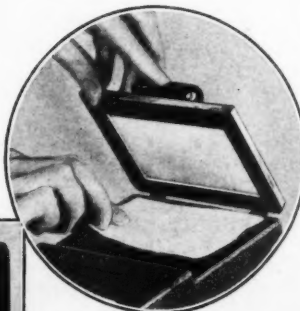
● An early candid camera (Smith). Its features: Fast lens, fast shutter, 35 mm. film.

been attracted to the miniature camera because of the fact that a much wider than usual selection of film is made available. Film can be had in many types which are not available for use in any camera other than the 35 mm. miniature, such as special fine grain, fast and infra-red emulsions.

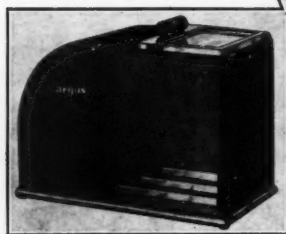
Further advantages in using 35 mm. film are the preponderance of accessories and equipment designed to work with 35 mm. film, i. e. projectors, printers, developing tanks, bulbs, film loaders, enlargers, filing cases, film viewers, and many other accessories which are a delight to own and use. Another very important reason why miniature photography has become so popular is that

35 mm. miniature cameras permit as many as 36 exposures per loading, and film can be purchased economically in bulk and cut to any desired length.

Fixed focus enlargers such as the Argus automatic speed printer, shown here, make print processing easy for the uninitiate. Standard album size prints $2\frac{3}{4}'' \times 4\frac{1}{4}''$ are easily and rapidly made at less than a penny a picture. With this automatic speed printer, focusing and other adjustments are done away with. It is merely



● Enlarging becomes just as easy and rapid as contact printing with this "speed printer". Each print is developed and fixed as usual. This machine is, in effect, a fixed-focus enlarger for making $2\frac{3}{4}'' \times 4\frac{1}{4}''$ prints from $1'' \times 1\frac{1}{2}''$ negatives.



necessary to lay the ready-cut printing paper in the printing frame and press down the printer handle for a few seconds which automatically makes the electrical contact and exposure.

Development is completed through the usual process involving three small trays, a small quantity of paper developer, and acetic acid, stop-bath and hypo—all inexpensive and readily obtainable from photographic dealers. It is all as simple as contact printing, which was described in MINICAM for November, page 46.

A wide variety of paper in the most popular contrasts, surfaces and weights, ready-cut to standard $2\frac{3}{4} \times 4\frac{1}{4}$ " size is available. Bromex glossy light-weight is a ferrotyping paper recommended for making record and study prints. The light weight, semi-matte surface is preferable for album mounting, while the heavy weight in the same surface produces the best all-round print for mailing or filing. The beautiful sheen of the silk finish produces a most artistic variation.

The speed printer can be used for other purposes as well. With it, positive film transparencies can be viewed on the ground glass in black and white or full color, and negatives can be studied and analyzed with a view to future enlarging and cropping. The fixed focus speed printer is the easy way for beginners to make their own prints and it is a valuable adjunct to the enlarger in the hands of the experienced worker.

One of the outstanding advantages of the *miniature* system of photography is that pictures can be made in almost any size from tiny contact prints to photo-

murals through the expedient of an enlarger. There is a wide variety of 35 mm. enlargers available to the amateur photographer of which the new Argus models are excellent examples.

With an enlarger of this type, the same high precision lens that took the picture can be used to print it. Provision is made so that the back can be removed from the camera and the camera slipped into place in the enlarger, providing easy, rapid focus and critically sharp prints. A brilliant, cool light source is found in the models EA and EAE Argus enlargers. These enlargers, with their prefocused concentrated filament light source, provide a bright, flat field, and, through reflector system employed, heat waves are absorbed, assuring cool operation. This prevents damage to valuable negatives through warping by heat. A cropping and framing easel on the baseboard holds the printing paper in place, for masking, cropping and composing.

The enlarging technique is easily acquired. It provides the most fascinating phase of miniature photography. It is easy to take a sharp miniature negative and secure large prints from it. To make an enlargement, place a negative in the enlarger film carrier, turn off the general room light, and with a safe-light burning, raise or lower the enlarger head until the picture is the desired size. Then adjust the focusing screw until the image on the baseboard is clear and sharp. Turn off the enlarger lamp, and place a piece of sensitive paper in the baseboard or easel. Then switch on the enlarger for (Page 84, please)

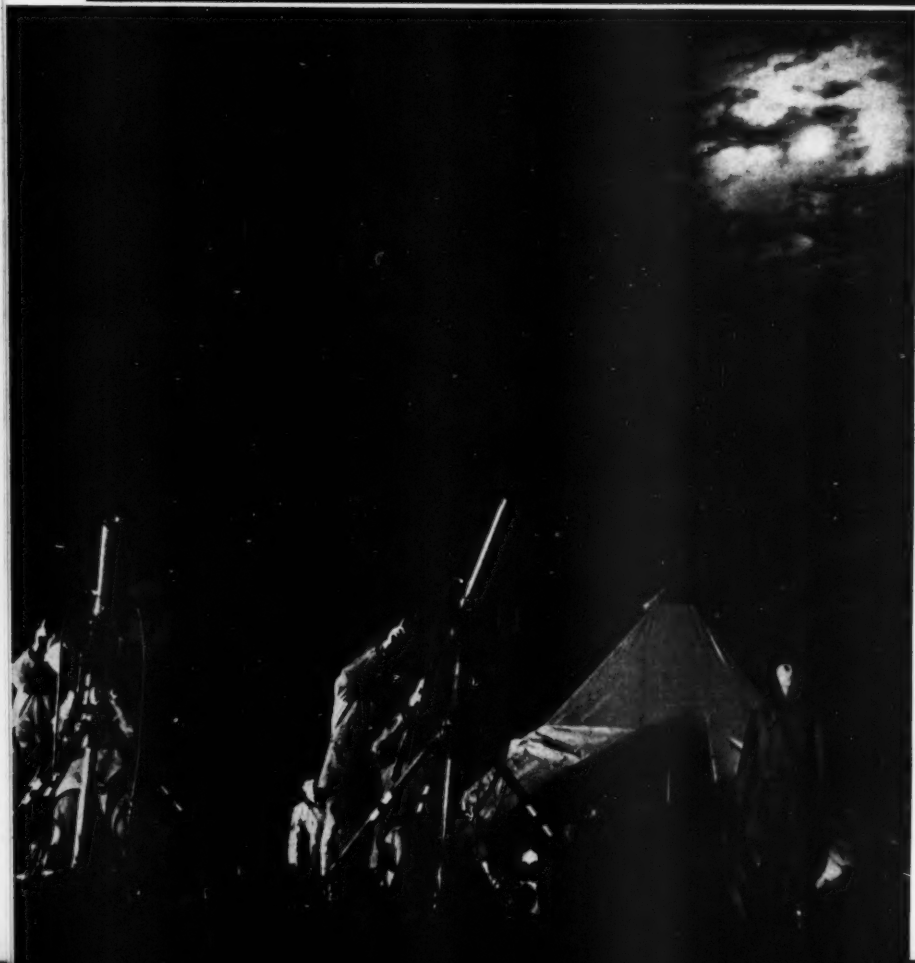


• A slide-binder kit (left) for mounting black and white or color positives in glass. Argus "CP" projector (center) for projecting the glass slides. The Argus "B" projector (right) utilizes film strips as well as the glass slides.



man and C
water first
man and C
water first
thing daily

WORLD
HISTORY





• This shot and the ones on the previous page were made to illustrate a sham air attack. Note the flare of the anti-aircraft cannon in the above. The camera with lens wide open, was focused on infinity, the shutter set on "T" and opened. After the lights flared, the shutter was closed.

NIGHT PHOTOGRAPHY

By VICTOR DE PALMA

Photographs by the Author

- (Top of previous page). How Broadway felt when the anti-aircraft guns went off illustrated by deliberately moving the camera while shooting. Ultraspeed film, f3.5 at 1/10th second. Had a perfectly sharp picture been desired, it would have been shot at 1/50th or 1/25th of a second.



- "Anti-aircraft Defense"—a combination flash and time-exposure. With the camera on a tripod, a 30-second time-exposure was made to register the moon, a flash bulb was fired to capture the ground subject material, and then the lens was closed. Movement on the ground during the time exposure will not be registered on the film because of the darkness. Many interesting effects are obtainable with this combination time-exposure and flash technique.

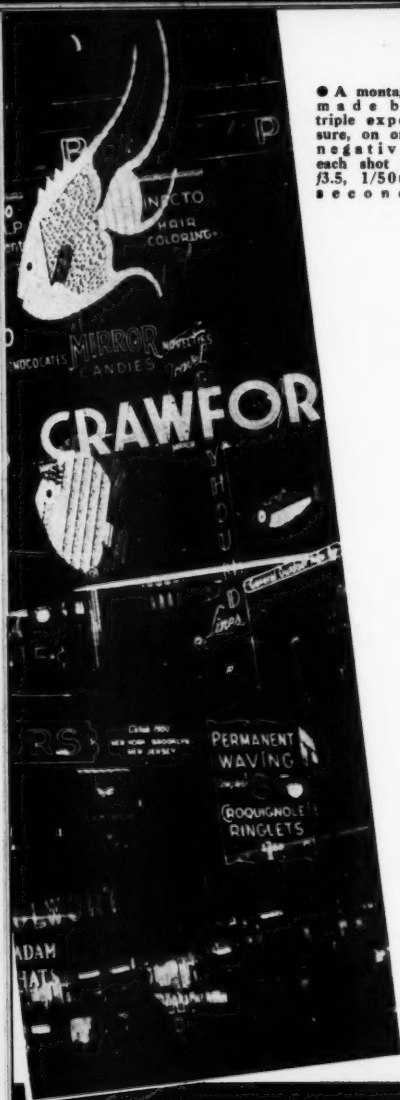
NATURE, or rather the sun, makes pictures possible during the day. At night it is man's illumination that makes pictures.

There is another difference. Ordinarily a subject is photographed by reflected light. At night, however, it is the light source itself that frequently is filmed.

You wouldn't aim the camera at the sun to take a picture, but this, in effect, is what happens when the camera is aimed at mazda and neon lights to take a night picture. It can easily be seen that night photography requires an entirely new approach and technique.

This is also why exposure meters are not easy to use at night. Pointed directly at an electric sign, the meter

● A montage made by triple exposure, on one negative, each shot at f3.5, 1/50th second.



needle shoots up. Aimed at a darker area, no reading at all is obtained.

To learn what exposure to use, visualize the illustrations shown here and the exposure used for each. Using this data as a guide, make a series of experimental shots and you soon will get an understanding of night exposures.

The next problem to be attacked is composing the picture. Most of what the eye sees at night does not register on the film. So look for arrangements in which lights are relatively close together. Avoid large dark areas. In the finder, arrange the lights until a pleasing composition is obtained, remembering that the finder sees beautiful green and red colored lights that to the black and white film appears simply in shades of gray.


Look for reflections caused by artificial light or moonlight. These require increased exposure of approximately three full stops. Water and snow create easily filmed reflections.

Look, secondly, for intricate patterns created by electric light bulbs and advertising signs. Watch for opportunities, when subjects are not in motion, for time exposures of about 1 minute.

Time exposures at night open up an entirely new and fascinating realm. The only accessory needed is a tripod and any camera may be used. If the camera lens is a slow one, it means simply that an increased time for the exposure will be required. As for film, select the fastest obtainable whether for night snapshooting or time shots.

● At night, Broadway's Times Square section is the world's most popular subject (below). Due to the brilliancy of the signs, it is necessary to overexpose about five times if detail is desired on the sidewalks and streets. Exposure 1/2 second at f4.5. Note the white dashes created by the automobile headlamps. These show exactly how far each car traveled during the camera's half second exposure.



- 
- Electric bulbs create beautiful patterns (right). S. S. Pan, 1/10th second, f5.6.



- Soft lights, combined with mellow moonlight, offer many opportunities to the camera pictorialist. Three exposures were made of the above scene on S. S. Pan, at f8. The exposures were 1 minute, 2 minutes and 4 minutes. The two-minute exposure produced the negative which made the best print.

- This is a favorite combination (below)—the soft light of a setting sun combined with the glow of thousands of electric light bulbs. Winter months are best, when lights go on early. Exposure 1/2 second at f8. Always use a tripod and a lens shade.



MAKE-UP FOR MUGGING

How to delineate character parts in self-portraits

By A. CREEKMORE
Self-Portraits by the Author

EVERY great portrait painter, at one time or another, has set up his easel next to a mirror and used his own face for a subject. Many a photographer does the same thing with his camera.

The new angle in self portraiture, however, is the delineation of character parts. Just making faces in a mirror yields pictures looking like, well—*just making faces in a mirror*. More than mere mugging is desired, and can be obtained by means of a few props, such as an old hat or scarf from the attic.

A panchromatic makeup set is a desirable accessory in all portraiture. The base

● "The Villain". Crepe false hair, if it is not moistened, becomes fuzzy in appearance. Exposure $\frac{1}{4.5}$, $\frac{1}{25}$ th second.



● The author took this portrait of self and Rolleicord in a mirror. The other self-photographs were made by means of a string attached to the shutter release.

paint, lining pencils, and eye shadow can be obtained at most photo supply dealers in complete kit form. A little crepe hair will provide the necessary whiskers.

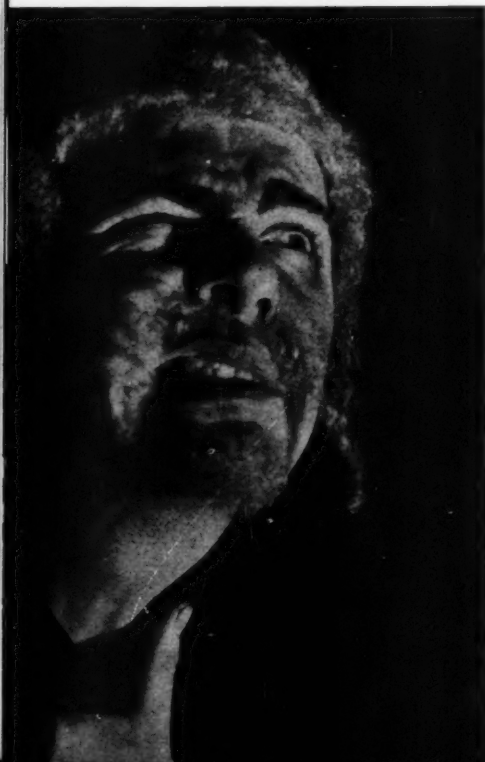
Posing as a double-dyed villain seems to be more fun than anything else. Just assembling a kitchen knife and a few old caps and scarfs is not quite enough to achieve really dramatic results. By means of makeup, however, excellent skin texture can be obtained and the entire physiognomy changed.

Nor is it necessary to make up like Lon Chaney, Boris Karloff or King Kong. The true artist uses restraint, and a scar, a piece of cotton, or a wisp of false hair is all that he needs to create a complete transformation.

The old sea captain was simple to make up. I locked myself in the basement, the better to work without being disturbed. At one end a piece of black cloth was strung for the background. At the other I set my Rolleicord on a tripod with a 4-foot length of string to set off the shutter. For lighting I have two photofloods.

I started to make up the sea captain by first applying a dark base paint all over the face, wetting the hands in order to better spread the paint on evenly without streaks. Gray eye-liner next is applied

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● "The Hunchback". Rolleisord camera. Exposure $\frac{1}{8}$ sec. second, pan film.



● "The Old Sea Captain" (right). Drug store collodion made the cheek scar.



● "The Apache" (left). These all are self-portraits made with the camera on a tripod about 8 feet away. The shutter was released with a string.

33 RULES for enlarging

By ALEXANDER LINDEY

Illustrated by the Author

Save time, materials, equipment and negatives by noting these do's and don'ts.



IN the beginning," Mack Minifan said, "I made up my mind to avoid the trial-and-error method. I didn't want to waste time and money. I read every text I could find, to make *sure* I wouldn't be making stupid mistakes."

He paused with the air of a man about to make a revelation. "I was in for a jolt, all right. Everything seemed to go wrong. It looked as though I'd never turn out a decent print. I kept at it, though, and after a while things began to look up. One by one my troubles were solved."

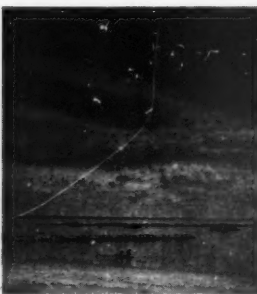
He looked contemplative, and somewhat rueful. "Maybe it was the inevitable proc-

ess of learning by practice. I don't know. But I do know this: I have a grudge against those text-writers. They gave algebraic formulas for exposure time, they told all about the theory of optics, but when it came to down-to-earth advice about actual technique, they didn't bother to be specific. If only they had warned me about the snags I'd come up against!"

I had to agree with him. And so I propose to avoid the example of the theoretical text-writers and set down certain definite, concrete rules. I'll assume that the reader knows the fundamentals. Some of the rules concern things to be done;



● The result of faulty illumination is seen at the corners of the print. Adjust light source and condenser, until light is of equal intensity on every part of the easel. See Rule 4.



● The result of particles of dust and lint on the negative, the condensers or on the glass negative holders is indeed a sad sight. See Rule 3.



● Make full-size test strips, allowing the test to be underexposed on one end and overexposed on the other. See Rule 19.

- Do the cropping on test prints or on the easel so that only the desired portion of the negative will be used for the final print. The small picture is a weak and meaningless composition because there is too much in it. The enlargement shows how a much better composition was obtained by cropping along the top and right side. See Rule 15.



others, things to be borne in mind; still others, things to look out for. Here they are:

1. When you set up your enlarger, arrange it so that the supporting post will be *opposite* you as you work. It will then be out of the way, and when you do dodging there will be less chance of the dodging card jarring the post and blurring a print.

2. Place the enlarger on a secure place. Don't choose a rickety table or an unsteady shelf. Make sure that the upright post is firm.

3. Keep the enlarger clean. Lens, condensers, diffusers, and particularly the glass plates of the negative carrier, should be free of dust, moisture, finger-marks, or

particles of lint and hair. Spotting is a tedious and difficult process. Much of it can be avoided by cleanliness.

4. Check for evenness of the illumination. The intensity of the light-rays should be uniform throughout the area of projection. Some enlargers tend to fade off at the corners, resulting in prints that are light along the edges. Examine the lamp-house, and move the light-source until the field appears even, as seen (without film in the machine) on a blank sheet of white paper.

5. Don't use a photoflood unless absolutely necessitated by a dense negative. Most lamp-houses are not too well ventilated. And whatever your light source, don't leave the switch on longer than you have to. Overheating may buckle a negative and crack the condensers.

6. Look out for light-leaks. In most enlargers the dome of the lamp-house is

(Page 79, please)

VALENTINE IDEAS

By PAUL HADLEY
Illustrated by the Author

ST. VALENTINE'S DAY is nothing without a heart, a Cupid—and perhaps one of his dangerous arrows. With these props, Valentines may be made as easily as photographic greeting cards.

The heart can be made of cardboard, painted for photographing purposes. Any small child can play the part of Cupid. As for wings, they can be drawn in on the print. Exposures are made indoors with a couple of photofloods or flash bulbs, and

good pictures also can be made by means of short-time exposures.

Use plain backgrounds, the plainer the better, such as a white sheet, stretched tightly on the wall and held in place with thumb tacks. In addition to accentuating the figures, the white surroundings make a suitable background upon which lettering later can be done.

A bow and arrow may be cut from thin
(Page 92, please)



● The woven-hearts valentine, ready for mailing.

● The woven-hearts photographs being separated.



● For cupids, photograph children, even if they have no wings. Use a couple of flood lamps, and a large white sheet for a background. These two cupid photographs were made with a Perflex camera, f3.5 at 1/25th second.



Monthly PICTORIAL ANALYSIS

Conducted by

J. GHISLAIN LOOTENS, F. R. P. S.

WINTER offers some of the finest opportunities for good pictures. An ordinary scene takes on a new significance "when ridged inch deep with pearl". Locations which are photographically barren during other seasons abound in pictorial material. Composition becomes simplified; the confusing detail and color of a landscape are brought down to a simple structural form in related hues. Things compose themselves in clearly defined outlines and many who have difficulty in "seeing" pictures find their eyes sharpened by the freshness of an old scene. This fairyland transformation applies not only to the open country side but equally to crowded towns. If Prairie Valley achieves a loftier status under the white down, so does Broadway and 42nd Street assume a new dignity lacking at other periods.

While most photographers, however, are aware of the rich possibilities of Winter, few of them agree as to the best method of portrayal. Opinions differ not only as to the manner of execution but also as to the choice of materials for the job.

For example, there are those who believe snow scenes should be rendered in a brilliant, sharply defined manner—full of sparkle with the sun revealing a crisp granular structure. Others confine most of their work to days when the atmosphere is dull and grey and foggy weather cloaks everything in mist, making texture a matter of secondary consideration. Even the use of a "soft" focus lens sometimes is resorted to, further eliminating or toning down distracting details.

Much has been said by good men on

both sides of the question. Leonard Missonne gives us masterful creations in the soft style which appeal to lovers of the "grand manner", while Ansel Adams turns out perfect prints with sharp images showing the fullest possible tonal scale to delight the critical gaze of the modernists.

Even as to the selection of papers it is anything but unanimous. Many use only black and white bromides of a glossy surface; others prefer a matte stock with a delicate ivory tone, while numerous pictorialists consider it advisable to tone snow scenes in shades of blue.

As to exposure and development, most workers agree that if only snow is present, the exposure should be on the "short" side followed by normal development. If dark objects are included (houses, rocks, etc.) the exposure should be on the full side but the developing time should be shortened to lessen the natural contrast of such a scene. In all cases, over-development will prove fatal to the best rendition of snow texture as it causes the blocking up of the delicate highlights. The essential thing to strive for is a negative of the right contrast to suit the enlarger and paper you have in mind—a matter for actual experience.

To those who by now feel that snow subjects (or any other) are too difficult to handle, may I suggest a practical method of procedure covering the most important factor: correct exposure? And that is, make three exposures of every single scene. One exposure should be based on the "correct" reading of the meter; the other should be twice as much, while the third half as much. Do this by varying the

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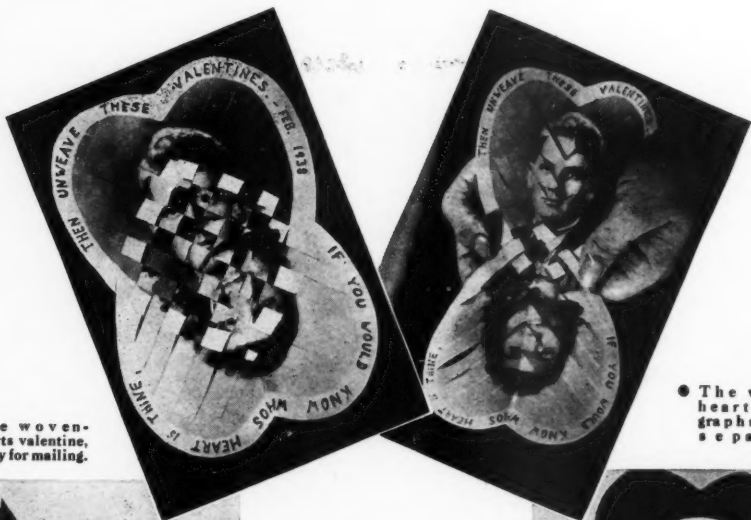
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Conducted by

J. GHISLAIN LOOTENS, F. R. P. S.

WINTER offers some of the finest opportunities for good pictures. An ordinary scene takes on a new significance "when ridged inch deep with pearl". Locations which are photographically barren during other seasons abound in pictorial material. Composition becomes simplified; the confusing detail and color of a landscape are brought down to a simple structural form in related hues. Things compose themselves in clearly defined outlines and many who have difficulty in "seeing" pictures find their eyes sharpened by the freshness of an old scene. This fairyland transformation applies not only to the open country side but equally to crowded towns. If Prairie Valley achieves a loftier status under the white down, so does Broadway and 42nd Street assume a new dignity lacking at other periods.

While most photographers, however, are aware of the rich possibilities of Winter, few of them agree as to the best method of portrayal. Opinions differ not only as to the manner of execution but also as to the choice of materials for the job.

For example, there are those who believe snow scenes should be rendered in a brilliant, sharply defined manner—full of sparkle with the sun revealing a crisp granular structure. Others confine most of their work to days when the atmosphere is dull and grey and foggy weather cloaks everything in mist, making texture a matter of secondary consideration. Even the use of a "soft" focus lens sometimes is resorted to, further eliminating or toning down distracting details.

Much has been said by good men on

both sides of the question. Leonard Missonne gives us masterful creations in the soft style which appeal to lovers of the "grand manner", while Ansel Adams turns out perfect prints with sharp images showing the fullest possible tonal scale to delight the critical gaze of the modernists.

Even as to the selection of papers it is anything but unanimous. Many use only black and white bromides of a glossy surface; others prefer a matte stock with a delicate ivory tone, while numerous pictorialists consider it advisable to tone snow scenes in shades of blue.

As to exposure and development, most workers agree that if only snow is present, the exposure should be on the "short" side followed by normal development. If dark objects are included (houses, rocks, etc.) the exposure should be on the full side but the developing time should be shortened to lessen the natural contrast of such a scene. In all cases, over-development will prove fatal to the best rendition of snow texture as it causes the blocking up of the delicate highlights. The essential thing to strive for is a negative of the right contrast to suit the enlarger and paper you have in mind—a matter for actual experience.

To those who by now feel that snow subjects (or any other) are too difficult to handle, may I suggest a practical method of procedure covering the most important factor: correct exposure? And that is, make three exposures of every single scene. One exposure should be based on the "correct" reading of the meter; the other should be twice as much, while the third half as much. Do this by varying the

opening of the diaphragm of the lens and not by changing the shutter speeds. For example, if the meter calls for a setting of 1/50th of a second at f11, the next should be 1/50th at f8 and the third 1/50th at f16.

But, having decided on the right film and filter, the correct exposure and development, and also the paper, there is still something else necessary for really successful snow pictures—a genuine love for Winter and its moods. The man who dislikes or dreads the cold weather is not apt to be tempted outdoors often enough to become proficient in this interesting phase. For the psychologist tells us that we are at our best when we do a thing which gives us enjoyment. It seems therefore the most natural thing in the world for a son of the North to take a special delight in the outdoors when less rugged souls huddle near a radiator. Furthermore, if he also happens to be a crack photographer, he stands a good chance of becoming the foremost expert in snow photography. For that is exactly what many think of Gustav Anderson, a transplanted Scandinavian, who finds equal delight in the arts of skiing and Winter photography. Both deal definitely with a substance in which he is quite at home since childhood—snow.

Like other great photographers, Anderson has his own individual way of handling snow subjects. He prefers to see the sparkle of brilliant snow rendered with the sharpest definition. He uses his skis to glide around a selected spot until he finds the right angle. He takes delight in shooting against a low sun for bringing out

texture and the right play of shadows. If the time of day is not altogether suitable, Anderson does not mind returning hours later for just that right moment. His prints show a fine scale between the brightest and darkest portions of any scene; his snow always has the right tone without detriment to the shadows.

"Winter Eve" is one of his best known studies. It has been exhibited in all the important salons, winning top honors in many keen competitions. It combines excellent composition with fine photographic technique. While possessing broad tone masses, attention has been given to the retention of good definition in the smaller objects.

Note how the picture is basically composed of two major masses separated and yet joined by the diagonal line of the road. The first mass consists of the dark outline of the corner of the building and its strong shadow in the immediate left foreground. The second comprises the two smaller buildings surrounded by trees. Each one of these masses acts as a balance for the other. Because of the important position which the two houses (1) occupy in the picture space and the fact that they denote "human" interest, they call for the greatest attention on the part of the viewer. Anderson has accentuated this normal center of interest by making it the meeting ground for strong highlights and deep shadows.

The large shadowy foreground (2) is of great assistance in creating distance through contrast with the smaller group of houses and lighter tones in other areas. Perspective is further enhanced by the direction of the road and the change of tonal values in the distant planes, 3, 4, and 5. Notice how casting the sky in a dark hue has the effect of emphasizing the brilliance of the snow. A blue sky should always be rendered darker than sunlit snow.

Areas which might have had a tendency to monotony are broken up in an interesting variation of tones, such as footsteps in the foreground and middle lane, and through the use of horizontal lines formed



● The numbers on this sketch refer to the corresponding parts of the composition on the next page.



WINTER EVE

By GUSTAV ANDERSON

by the fences on the far side of the road.

Observe how vital the sun has been in the making of this picture; how all texture and modelling would have suffered if such strong side light had not been available. Some photographers never take a snow picture unless the sun is present to bring out the hidden lustre.

Merely as a matter of interest, Anderson uses an orthochromatic film (such as Veri-

chrome or Plenachrome) with a medium filter, development in buffered borax. While he prefers the straight photographic image, he does not hesitate to apply local retouching if it will improve the composition. The negative is usually printed on lustre or glossy paper which is toned blue in gold chloride.

(Next month: A picture by Edward Alenius, F. R. P. S.)

\$100

Photo Date

CONTEST

(For Contest Rules, see page 105)

CAN you shoot a series of pictures illustrating a "Photo Date"? The 11 snapshots on these pages show one way of doing it. This "Photo Date", illustrating an old camp song, was arranged, acted out and filmed in less than an hour.

Props:

Bicycle, frying pan, bed sheet, blanket, logs, flowers and halo (dishcloth on coat hanger).

Camera:

Zeiss Ikonflex f3.5 with Agfa Superpan Press.

Lighting:

Three Number Two photoflood lamps.



1. "She sat on a hammock and played her guitar . . ."



2. "He sat down beside her and smoked his cigar . . ."

3. "He told her he loved her, but OH, how he lied . . ." (note crossed fingers).



5. "He went to her funeral, but just for the ride . . ."



6. "He sat by her tombstone, and 'boo hoo' he cried . . ."



7. "She went up to heaven, and 'flip flop' she died . . ."



8. "He went to hell, and sizzled and fried . . ."



9. "The moral of the story is never to lie . . ."



10. Cameraman . . . Kenneth.



11. Script Girl . . Eunice.



● A multiple-flash photograph of a golf player with a midiron. By counting the golf club positions, it can be seen that there are 70 separate exposures. Each exposure was made at $1/100,000$ th of a second at intervals of $1/100$ th of a second between exposures. The tee can be seen very faintly flying up toward the upper right hand corner. Fig. 1.

SUPER-SUPER SPEED

*New "stroboscopic" light source
"freezes" action of flying golf ball*

BY B. TAYLOR

Illustrations by Spalding

BY a new "Super-Speed" method, photographs not only may be taken at $1/100,000$ th of a second, but as many as 600 separate exposures per second can be made.

This achievement of Dr. Harold E.

Edgerton, of the Spalding Research Laboratory, makes it possible for "time itself to be chopped up into small bits and frozen so that it suits our needs and wishes."

In the illustrations shown here, super-speed photography is used for the study of

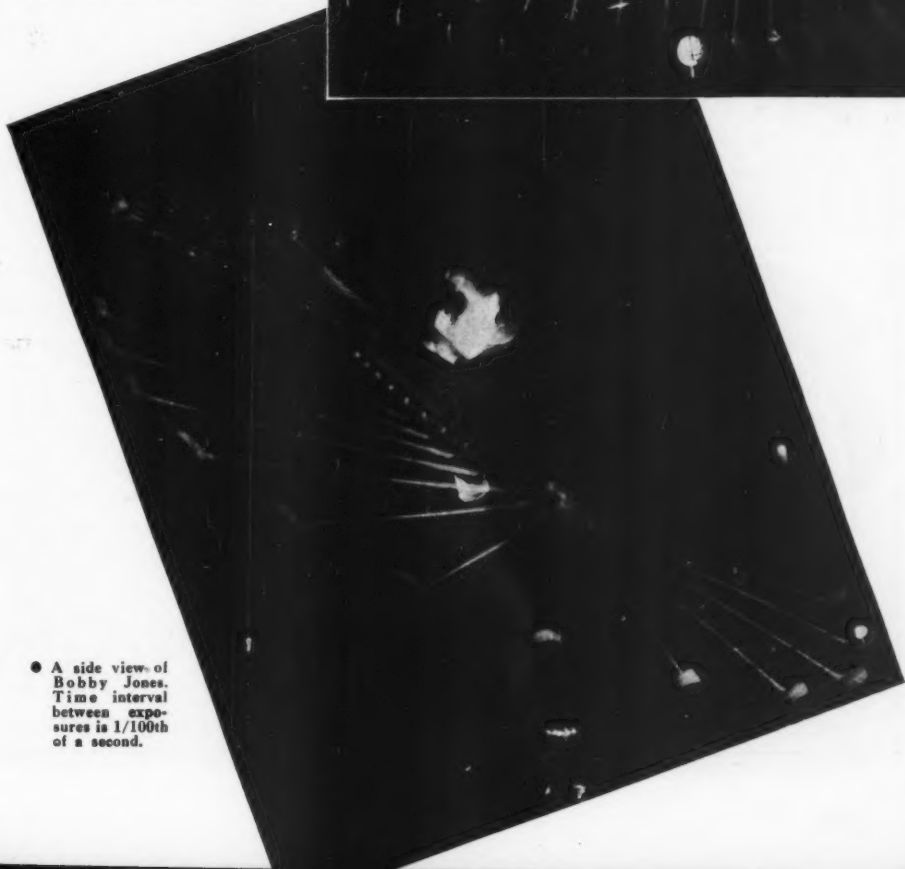
the game of golf, but it can be applied to the photography of rapid motion in any field.

Photography with such short exposures is made possible by the use of electronic lighting and control devices, by which short exposures are possible and the timing of the flashes is under accurate control.

With the new process, light from gas-filled tubes is controlled so accurately that in-

(Page 104, please)

- In this super-speed picture (right), the $1/100,000$ th of-a-second flashes appear at the rate of 600 per second. Note how the golf club is bent at the instant of impact. The first golf ball image is bright white, having received many exposures until it was hit. The succeeding images of the moving ball are only barely discernible, but enough to show that the ball (moving at the rate of 225 feet per second) has been stopped cold by each of the $1/100,000$ th of-a-second exposures.



- A side view of Bobby Jones. Time interval between exposures is $1/100$ th of a second.

IT'S FUNNY NOW THAT I THINK OF IT

LOOK THEM OVER - DO YOU RECOGNIZE THEM?



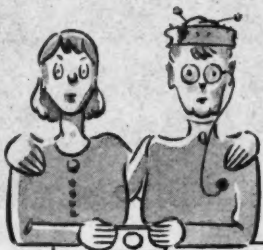
AMATEUR'S WIFE -
DEVELOPS THE
FILM, POSES IN THE
NUDE AND REFRAINS
FROM LOSING
HER TEMPER

EXECUTIVE TYPE FAN
LIKES TO DIRECT THE
HEAVY WORK FROM
AN EASY CHAIR

SHAKE EM
UP, HONEY!



TOWN PROFESSIONAL
SWEARS BY THE 8x10
AND DAMNS AMATEURS
AND ALL THEIR RELATIVES



MRS. S.A. VOID AND DAUGHTER
REGULAR CAMERA CLUB FANS -
HEAR A TALK ON FALSE
MODESTY AND THE BEAUTY
OF THE FEMALE FIGURE



5 WEEKS HAVE PASSED AND MR.
SERIOUS FAN HAS NOT HEARD FROM
HIS CONTRIBUTED MANUSCRIPT -
NAUSEA AND BITING OF THE
NAILS ARE THE RESULT -



MR. GASHOUSE KNOWS ALL THE
SECRETS AND CANT RESIST
TELLING THEM TO EVERY
BODY - NEVER TOOK A GOOD
PICTURE IN HIS LIFE



A TALK ON GADGETS
INCLUDED THE
SIMPLICITY OF
HIS HOME MADE
TRIPOD

MR SILENCE - NEVER
SAYS ANYTHING -
COPS ALL THE FIRST
PRIZES AT THE
CAMERA CLUB
CONSISTENTLY

DR. SO AND SO DECIDES
TO GIVE UP PHOTOGRAPHY
AFTER USING 2 DOZ
FLASH BULBS, ONLY TO
FIND OUT HE NEGLECTED
TO PUT FILM IN HIS CAMERA



Harley
Krueger

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With framing easel as shown here...
Model \$17⁵⁰
EAE

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Being CRITICAL

THIS snow picture, obviously no masterpiece, yet has a pleasing quality. The texture of the snow is good, but it is one of those pictures which will probably meet its death on the trimming board. It is obvious that the foot prints along the extreme top of the picture have no place in the composition. We trim them off. Then it becomes necessary to cut down some of the snow on the left of the print to bring it into the right proportion. Next we decide that too little of the tree shows, and it must come out. This leaves nothing but snow which we attempt to crop into some sort of a pattern picture, but failing in this, we are left with a picture of a small piece of snow which figuratively melts into the wastebasket. However, this is the sort of photograph which is so close to a real pictorial print that it serves to give the maker added incentive to go forth once again and capture a real masterpiece.

ATTEMPTING to photograph great towering waves from a ship caught amidst their fury has probably caused more disappointment to well qualified photographers than any other one thing. We know from experience that the waves shown in this print were probably of mountainous size, yet the average person would not be impressed with their fury. To make the waves look somewhere near their



● "SNOW PICTURE". Perflex camera, 1/25th second, f/16, yellow (K2) filter. Super pan film.

real size, it is necessary to shoot the picture from as low a vantage point as possible. A shot from a lower deck would have given added height to the waves. Shoot the picture so that the horizon does not show or is cut by the sweep of one or more big waves and the appearance of roughness will be captured. It would have been better to have kept the horizon level in this particular print and show the mast at an angle.

IT probably was the photographer's intention in "FEAR" (next page), in his lighting and pose to achieve a rather dramatic result.

In this he has succeeded. However, the print is too contrasty to bring out the best in the negative. Harsh lighting produces results which come out best on soft paper.

The pose of the hand is poor. It looks as if the subject were grasping something which she could not quite get her fingers around. The hands should have been shown at an angle where the side of the hand faced the camera and the thumb were closer to the forefinger while the other fingers should have all been together. The angle of the eyes creates a sinister effect which was probably not the intention of the photographer. For a portrait, white should be seen on each side of the pupil in the eye.



● "THE STORM". Voigtlander Bessa 2 1/4" x 3 1/4", 1/100th second, f/4.5, no filter. Agfa Finopan.

IT IS rather too bad that this child's arm is out of focus. Otherwise this would be an exceptionally fine photograph. In working with active children it will oftentimes be necessary to use large lens openings which will of course



● "GIMME MORE". Purma Special camera, $1\frac{1}{4}'' \times 1\frac{1}{4}''$, exposure $1/50$ th second at $f6.3$ with two flood lamps. Superpan Press film

make the area in the picture which is in focus quite limited. In this particular case the problem could have been solved in either of two ways. The picture could have been taken

from the opposite side in which case the hand would have been in front of the face and in focus, while the arm which would have been partly shown receding in the background, could have been a little out-of focus with no harm done. Or the picture could have been taken from the same angle, but with the camera moved far enough back so that the area in focus would include the arm as well as the head of the child. The resulting image could then have been enlarged to the required size.



● "FEAR". Eastman Bantam Special, $1/25$ th, $f8$, Eastman Super-X film. Lighting by a single spotlight.

Film Speed and Grain

It is impossible to obtain, with the fastest films, the same degree of sharpness as from the slower films, even if we develop this fast film in the best fine grain developer and the enlargements show no apparent grain. The sensitivity of film is increased by increasing the size of the original silver bromide grains. This brings increased sensitivity but also greater grain size.



A Graflex-made Picture by Harold M. Lambert

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Wings

(Continued from page 14)

near the camera, set out a few delicacies to tickle the winged palates.

Suet pushed in the bark of trees will attract nuthatches, brown creepers, and downy and hairy woodpeckers. Seeds put on platforms in trees or on poles will bring song and tree sparrows, juncos, blue jays, thrushes, chickadees, and white-throated sparrows. Seeds thrown in fields near woods will attract pheasants and bobwhite.

Local ponds, creeks and marshes reveal black ducks, mallards, probably geese, and herons. These larger birds are harder to lure, but sooner or later they will fall for bait and come within range. Ocean beaches always have gulls feeding, and the herring gull and his larger cousin, the great black-backed gull, make excellent lens targets. The latter make good action shots too, and provide subjects for the pictorialist who likes clouds, roaring breakers, and backgrounds of leafless trees against a winter sky.

After we know where birds may be found, and after a few experiments baiting them, we are ready to shoot. Any camera fan who thinks that he can go out over a week-end and get a few bird shots is sadly mistaken — or extremely lucky. It takes time and preparation to get birds to be willing subjects. When food is put out regularly for a few days, and the birds get to rely on it, they will form regular feeding habits. When this happens, the time is ripe to shoot.

There are three schools of thought in the technique of wild bird photography. The first uses blinds, the second remote control. Each has its advantages.

Members of the third school of thought insist on the use of telephoto lenses at all times. This is all right, but naturally is limited to those who own telephotos.

To get song birds, which are most easily attracted to suet and seeds, remote control of one sort or another is preferable. Suet in racks or in the bark of trees about six feet from the ground will at-

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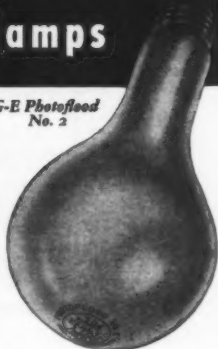
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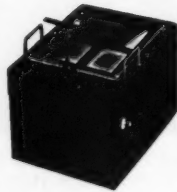
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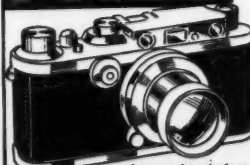
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tract nuthatches and woodpeckers. These birds have a more or less regular feeding time. Last winter I had a downy woodpecker who would feed in a nearby maple about two o'clock every afternoon. It was easy then to fasten my camera on a pole about six feet away. I tied a long piece of silk thread to the shutter release, ran it through a screw eye in the pole, walked about twenty feet away and waited. When the bird came to eat—snappo—it was all over but the developing.

For the "lazy" lensman, there is nothing to do but sit indoors and let the birds come to him.

This is done by stretching a wire to a tree or clothes pole. On it, there will travel a small platform with a pulley at each end. Suet and seeds on the platform is the bait. Each day the "bird lunch" platform is pulled a little closer to the house.

Before long, the birds will be eating off your window sill. Keeping the window shade down low, no movement within will be visible to the birds as the lensman shoots.

Many interesting shots may be made by this method. If you live in a part of the country where starlings and English sparrows predominate, you can witness what biologists call "the struggle for existence." The larger, city-bred birds always try to drive away the wilder "out of town" species. But, once in a while the "city slickers" meet their equal, in a woodpecker, for example. He refuses to give up his food to the starlings, and often puts them to flight. Blue jays and catbirds also visit the feeders. Scolding and squawking at the sparrows and starlings, they furnish a free-for-all fight right in front of your still or movie camera.

In choosing film, use the fastest available. Success in "freezing" the motion of a bird in flight depends on what part of the bird's motion is being filmed. A gliding bird can be stopped at about 1/200th of a second. For a distant flight, 1/100th of a second is rapid enough.

On the other hand, if you are within

25 feet of a bird, use the fastest speed your camera allows, whether this be 1/200th, 1/300th or 1/500th of a second. When in doubt compromise on the faster speed. Lack of sharpness is a fault of most bird pictures and increased shutter speed is the cure.

Within 15 feet of a moving bird, a shutter speed of 1/500th of a second, or faster, is required.

Use a camera finder of the wire or sports type if available.

If you have what enthusiastic birdmen are prone to call "delightful dumps" nearby, gull shots will be easy. While gulls are feeding on a dump, they may be readily approached, and if they do fly up, they return soon. Clapping your hands will send them up into the air for set-up action shots. They hover for a few minutes and then sail down again. Shoot for a sequence showing a gull eating, taking off with kicking feet, hovering in air, gliding toward the ground, and finally, the landing.

On the sea coast, breakers make a magnificent background. A gull flying up with a clam in his feet to drop and break it on the hard sand is a shot to be prized forever.

Finally, we come to the more difficult water birds. They're hard to get because it takes time to find them; then more time is required to attract them to food. But once ducks and geese, and even the majestic great blue heron find that they can rely on food in one place every day, your problem is solved. A blind of one sort or another is needed. The easiest to get is the tent variety. A common pup tent, or a more elaborate home-made blind will suffice. It may be made of drab green, khaki denim or burlap. About six and a half feet high, and three or four feet square is a most practical size. It can be folded up into a small bundle weighing but three or four pounds. The upright poles are one inch square and the cross pieces the same size. The denim is sewed together so that the poles and cross pieces keep it taut. One side is open, and fastens together with hooks

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after it is entered. Over the top is stretched another piece of cloth. In one side is cut a small aperture which can be closed when not shooting. Avoid loose ends which can flap in the breeze; nothing will startle birds faster.

It takes ducks a while to get used to a blind, so get it up a few days before you plan using it. Then, by the time you are ready, the birds will be accustomed to seeing it and will not be shy about coming within shooting range. The blind can be about six to twenty feet from the food, depending upon the nature of the location. My blind was in the water about ten feet from where the birds usually feed.

A lone mallard taking off from a pond surrounded by leafless trees, with a sombre winter sky in the background; a pair of black ducks coming into a pond that ripples in the winter wind; a Canada goose honking as it flies by with a sunset as a background — all are shots that tax the skill of the pictorial photographer. But when you have them, you have pictures that cannot be matched.

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white, are photographed in much the same manner as the waterfowl. Food scattered about in a field, a blind near by and a knowledge of when and where they feed, a little waiting and you have your shots.

There are several tricks that can be used. As peculiar as it sounds, most birds are less afraid of an automobile, boat or horse, than they are of a lone man walking. I have driven within two feet of bobwhite, pheasants and gulls, and have had them keep on feeding as if I were miles away. I have paddled down on ducks and herons feeding in marshes without frightening them. But just try to walk up on them! It's hard to explain, but neither the noise of the motor, or the sight of a canoe will frighten birds half as fast as the sight of a human being.

To get good bird shots, then, the photographer must first locate his subject. A call on your local bird club or Audubon Society will get information on the best birding grounds. The rest depends on originality and patience.

Exposure Meters

(Continued from page 26)

be attained. In the meantime, the table on page 24 may be used for approximate comparison of the various systems.

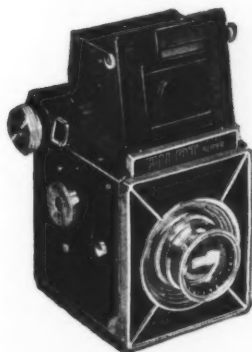
The most practical method is to become familiar with one system, that used by your meter, and obtain speed ratings in this system for all films used.

Photoelectric meters show some variations, because the construction of photoelectric cells is molecular and therefore not subject to perfect standardization. The man who wants the most precise measurements, simply determines, by photographing a step wedge, the film speed ratings to use with his particular meter and camera.

The camera also is taken into account as shutters and lenses also vary in the accuracy with which they are calibrated.

It is in color work, that exposure is most critical. In general use, the main duty of the exposure meter is to indicate when conditions approximate conditions

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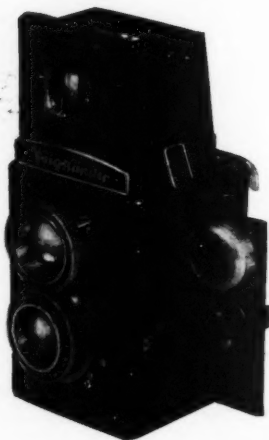
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which have been experienced before. For black and white pictures, the film has sufficient latitude to permit good prints to be made from negatives which have had several times under or over exposure. In the final analysis, that is the criterion by which to judge a negative: "Does it yield a good print?"

The sum total is that any photographer who uses *one* meter, who closely observes its action and establishes his own correction factor, will find that the meter will serve him admirably.

It Couldn't Happen

(Continued from page 21)

one tenth as fast. I felt very much at home in the studio, working with artificial light. Under these conditions, many, many, ideas would immediately pop into my mind for new and unusual portraits, but I found that I lacked this confidence when I went out into the country to take pictures.

Shortly afterwards, I began to make costume pictures. Inasmuch as I have lived abroad a great deal and studied history all my life, costume pictures of the sixteenth, seventeenth, and eighteenth centuries have a great attraction for me. Customs, scientific discoveries, and inventions, have greatly changed the external appearances of the world and its people. Human nature apparently has remained much the same.

I found during these past few months, that I possess an unusual faculty of being able to visualize my friends and the people about me, as they would have looked, had they lived two or three hundred years ago. Using costume books as a guide, and carefully studying old paintings, I have found the task of costuming to be very easy.

It is unnecessary to buy expensive costumes. Pieces of brocade and velvet, pinned together, create an illusion. In this type of photography, the illusion created is the all-important factor for success.

During this first year of my photographic life I have made many mistakes.

A year from now I could not write this article, I would have forgotten the mistakes.

First of all my greatest helper in portraiture has been the use of a visual filter. Had I used it from the very beginning, my failures would have been minimized. I bought a viewing filter ("blue-glass," they call it in Hollywood) and always use it to see how a picture looks to the film.

The human eye can see into many shadows where a panchromatic film will record absolute black. Strive for detail in the shadows right from the beginning. Do not experiment too much with contrasty effects. Use some type of a blue viewing filter that will cut down what you see to what will actually record on a negative. Look out for dense shadows. Trust the filter. Don't trust your eye at first.

Every beginner seems to have the idea in his head that he is going to discover something new. They are all experimental chemists with revolutionary ideas. Every day they discover a *new* and *better* developer. All of this occurs before they

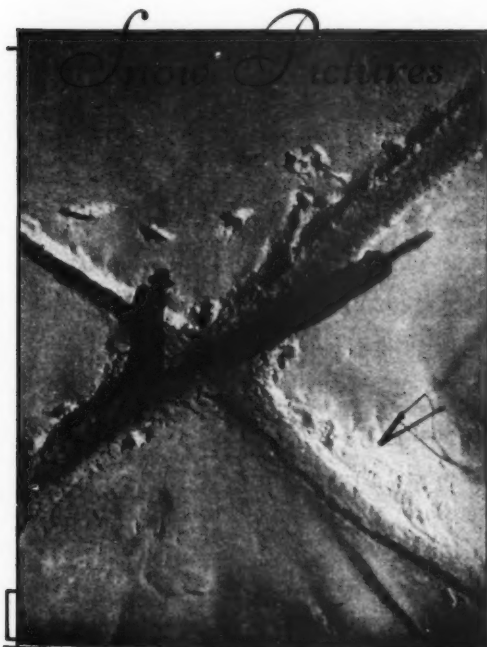
can turn out *one single good print* with any one developer.

I merely did *exactly* what I was told to do, step by step, by the experts, right from the start, and the results were consistently good. I did not experiment. Take *any* standard developer, standard film, and paper, and learn to get consistently good results before experimenting. Then you will have a guide to use for comparison.

More beginners under-print than over-print. I did and you will too. Get texture into every part of a picture. Do not leave any white spots in your picture that are of the same color as the margins. Listen to what you are told to do and do *exactly* that. This all sounds like old

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stuff but it seems to be the salient weakness of every beginner.

I began with the faulty premise that sunlight is like one great spotlight in the sky. Later on I learned that it has a thousand reflectors.

Light must flow around and behind the subject to avoid flat pictures. If your picture shows the planes of the face to be well defined, it will have a feeling of third dimension. I like to see that the tip of the nose is well away from the cheek, that the eyes have definite depth and that the sitter is generally well detached from the background.

Delicate differences of shadow detail will create this illusion on perfectly flat paper.

Practise endlessly to gain print control. Dodge—dodge in the dark room. You can often get something out of an impossible negative.

If you practise dodging until you are almost exhausted it will teach you to light correctly and avoid trouble in the first place and get the perfect negative.

You then will learn to light your subjects so that dodging will not be necessary.

It may sound like working backwards, but learning how to make a good print in the darkroom has taught me how to light a picture in the studio.

Your enlarger is the finest obtainable teacher of photographic technique.

Blood and Sand

(Continued from page 37)

There is no use trying to watch the sword blade because you will never see it. It is possible, however, if both bull and matador are sideways to you to watch at a point just above the bull's neck and when something like an arm shoots into the finder, press the button.

I have found that if you watch the man's hand and wrist you are tempted to shoot as he thrusts forward. But if you watch the foot, and catch it in mid-stride, you have a margin of safety in getting a good shot. Focus on the point of climax of the action.

Now here is a point to keep in mind

while watching cape work. If you hear a shout that sounds like "Iss-kwee-er-dah" (izquirda, meaning "LEFT"), get that shutter release almost all the way down. Nine times out of ten there is going to be more fast action than anyone can take care of.

The crowd is asking the capeman to change the cape from his right to his left hand. Now all previous cape work has been to make the bull hook to the left away from the man.

By changing hands the man is deliberately placing himself in front of the bull's left hook. He is in an awkward position trying to handle the cape with an unaccustomed hand, is facing a half crazy bull who may at the last moment go for the man instead of the cape. If the matador makes a single misstep, you may get a scoop. I have never yet seen a good, clear cut, sharp photograph of a bullfighter flying through the air above the horns of the bull who has just tossed him.

Bull fights have their humorous sides.

During one of the fights, the bull went over the fence. You couldn't see the bull, but you could follow his romp behind the fence as men changed sides of the boards with him. The handlers took to the *inside* of the bullring.

But if you want a good laugh never fail to see the baby bullfighters ranging from nine to sixteen years of age. Here any tips are of no value whatsoever.

Put a husky ten-year-old lad in the ring with a year-old bull calf who is frightened half to death and anything is liable to happen.

A boy four feet in height drops his cape and scales a five and a half foot fence. A bull calf becomes too frightened and runs over to snuggle up beside the boy, at this scene another erstwhile bullfighter flings down his cape and quits in disgust. Half of the audience follows suit.

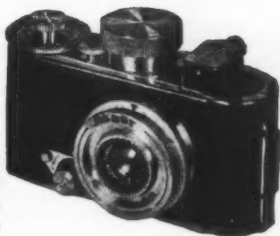
Sometimes a bull calf changes his mind at the last minute and charges the boy instead of the cape. The boy usually lands ten feet away on the well-known

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oreja (Spanish for "ear") not hurt but plenty surprised. It's just not according to Hoyle for a bull to act that way.

For all shots, you will find the 135-mm. telephoto ideal, but if you have no telephoto, just wait until the action comes to your side of the ring. The speeds I used were 1/250th and 1/500th of a second, which I found took care of all movement when I watched for the peak of the action. When action slowed down I dropped back to 1/125th. The film used was Eastman Super X and Agfa Supreme, all developed in Champlin #15 and printed on Eastman Kodabrom. The camera used was a Contax II with a 135-mm. f4. lens. Sometimes I used the Universal View Finder but just in case the action might become faster than I could adjust the parallax, I put four ink marks on the view finder in the camera marking off the field covered by the telephoto lens.

You may gasp at some particular bit of daring on the part of a bullfighter; you may feel a bit sorry for a bull who is so mad that he is practically immune to pain, but if you are a true minicam fan who likes to pit his skill against split second timing, you never will become bored with bullfighting and its opportunities for action pictures.

Where is Photography Going?

(Continued from page 32)

first is intellectualism, the second, emotionalism.

The modern trend toward human interest material is largely the result of newspaper and magazine influence. Editors demand unusual, striking, dramatic, eye-catching pictures. These are the pictures people can feel, pictures that arouse and stir up the emotions.

This is the influence that is seen in the staid halls of pictorialism. It is not to be assumed, however, that the New York Salon was dominated by human interest pictures. Rather the reverse was the case as might be expected in a gallery of pictorialism.

Pictorialism and sensationalism are but two of the conflicting trends seen. The

old and the new mingle also in a literal way. One of the prints was thirty-five years old, while another hardly was dry before it went up on the walls. The first ("Bowling Along" by William A. Bogers) was made in 1903, and still worth viewing as a beautiful pictorial composition, even though it dates back to "when photography was a pup."

Still wet, figuratively, behind the ears, were the prints by John Hutchins, and the same may be said of the photographic career of this young man who was only beginning to take pictures about the time the New York Salon was beginning to be planned!

"Apache" (page 30) was one of four outstanding prints which Hutchins completed the night before entries for the show closed. The subject, a French author, strode into Hutchins' home at seven in the evening. An inspiration flashed across the photographer's mind. He supplied a cap and a cigaret while a cover from the studio table completed the picture. Five hours later, the superb 14x17 inch print which attracted so much attention in the salon was completed and rushed to the salon judges for their consideration. All four entries were accepted.

Mr. Hutchins' work, and the amazing rapidity of his success, was the sensation of the show. So much so, that MINICAM asked him to tell about his work in his own words, and this remarkable story appears in this issue, on page 16.

Another relative newcomer to salon audiences is Gustav Anderson, who not unlike Hutchins, hardly appreciated his own work until its excellence was pointed out to him. His print "Winter Eve" won first place. For a reproduction of this print and a masterful analysis of it, see this month's "Pictorial Analysis" conducted by J. Ghislain Lootens, F.R.P.S. (page 53). Lootens, who knows Anderson's work intimately, was one of the judges of the New York Salon. The other judges were Dr. D. J. Ruzicka and Edward Alenius, F. R. P. S., who in December MINICAM wrote the article "Watch That Fore-



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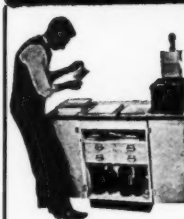
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ground."

Anderson started sending prints to salons after wandering rather timidly into the Camera Club one day and looking at the show then on display there. He had a package under his arm and, after falling into conversation with one of the members, shyly unwrapped it, showing prints which for their excellence outshone anything on the walls. Under urging, he began to exhibit.

Newcomers are appearing. Some people like to imagine that photography is "going to the dogs." There is doubt about this, but there is no doubt about the appearance of new talent. Photography is going to the youth.

Other straws in the wind also were discernible at the salon for those who would know whither photography is moving.

In the search for the unusual, photographers in recent years launched into artistic experimentation with the human figure. Overnight, the nude became the chief subject and concern of many photographers. Torsos, arms, legs, breasts, and thoraxes in every conceivable kind of composition hung on salon walls.

In the New York Salon only five figure pictures were hung, and these all were subdued and modest compositions.

There is no doubt of it. If models have a fashion authority, the official report from the style center must read, "Models are wearing more these days."

Some statistics of the salon tell us how serious amateurs are working. Of the 1163 prints submitted, 229 were selected for hanging. Of these 183 were vertical and 46 were horizontal compositions; 32 were toned blue, 51 were toned brown or sepia by one process or another, one was red and one was a bromoil transfer print with green ink.

Of the remaining 144 which apparently had no toning other than the use of warm tone developer, 66 were on white base paper and 78 were on cream or buff stock: The mounts were all standardized at 16x20. The prints were generally 11x14, although perhaps ten percent were 14x17

or larger. There were only three 8x10 prints hung.

Every camera user should see as many salons as possible. Who knows who the "next pictorial find" among the amateurs may be!

Make-Up for Mugging

(Continued from page 48)

under the eyes with the fore-finger. Blend it so no sharp lines will show. Also apply the gray liner to the hollow of the cheek, being careful to avoid the bone structure of the jaws.

Wrinkles may be put along the nose by means of the liner pencil. False hair is an important part of most any costume. Crepe hair is easy to work with if it is first moistened with a damp towel. Wrap the crepe hair in the moistened towel and leave over night or at least several hours before starting to make up.

This treatment will make the hair behave and it will not curl or kink. It is applied with spirit gum. Put your hat on and then start applying the crepe hair by stuffing it under the hat and using the spirit gum to make it stay in place. Trim to shape with shears. Put the spirit gum on, allowing it to remain until it gets tacky, and then push the hair into place.

Nose putty will give the proboscis any desired slant. It also will create a wart where it is wanted. A few crepe hairs pressed into the putty and then trimmed with the shears will add the final touch to convincing realism.

Distorting the cheeks and lips is obtained by stuffing with surgical cotton. This step should be left for the last as it is not too pleasant to work with a face full of cotton.

Scars such as are obtained in the old sea captain are obtained by means of pure collodion, obtainable at any drug store. Wipe the base paint off the area where the scar is to go. With the fingers, squeeze the skin together at this place and hold it until the skin reddens. There is your scar. To keep it there, immediately apply a little collodion. Pinch the scar again



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after the collodion has been applied, hold it there about a minute until the collodion hardens, and you have a real "Hollywood" scar.

For the final step apply a dark shade of makeup powder and you are all ready to don the cap, coat, or other prop to complete the costume for which your camera is waiting.

To portray "tough guys" in the tropics, Hollywood makeup artists long ago learned the use of oil on the skin. Olive oil or mineral oil is applied to the face, hands, chest or limbs. Good photographic highlights are thus created and excellent skin texture when this is desired.

The camera should be securely fastened to the tripod so there is no possibility of pulling it down or even jarring it when the shutter string is pulled. The latter may be run under a screw eye and under the left foot. With two photofloods and pan film, an exposure of 1/25th second at f/6.3 can be used for most of these shots. Ordinary 50 to 100 watt lamps also may be used with a time exposure of about 1 second at f/4.5.

Book Reviews

PICTURE MAKING WITH PAPER NEGATIVES, by Nowell Ward, 88 pages, 23 illustrations. American Photographic Publishing Co., Price \$1.25.

A complete and practical treatise on the making of paper negatives, written from years of experience.

This process is of especial interest to users of miniature cameras, it being virtually impossible to retouch original miniature negatives. It also is one of the simplest methods of making controlled projection prints.

Eight of the fourteen chapters deal with the following: Equipment, Development, The Proof, Paper Positive, Paper Negative, The Final Picture, and Trouble Bureau. Illustrations show pictures made from both the original negative and from the paper negative.

Darkroom Bench

If you have no regular darkroom work bench, use eight or ten thicknesses of newspaper on any convenient table. The newspapers will soak up spilled solutions, and when through working may be thrown away.

33 Rules for Enlarging

(Continued from page 51)

removable for bulb accessibility. Negligent replacement may leave an open crack.

7. Check your safelight. To test it, take a sheet of projection paper, cover one-half with a piece of cardboard, expose the other half for ten minutes about 18 inches from the safelight. Develop the sheet. If both halves of it are absolutely white, the light is safe. It is not, if one side shows up gray.

8. Study your negative before and after placing it in the enlarger. Study the negatives in the darkroom also next to their prints, evaluating density and contrast. This will furnish the best practical training in judging correct exposure time and correct choice of paper contrast. Some negatives, you will find, just refuse to furnish good prints. Other negatives are almost foolproof and readily yield prints with that elusive "print quality." Keep several of the latter handy for reference.

9. The fast bromide papers, although they will give brilliant results, have a tendency to softness. For pictorial subjects, the finest results frequently require use of one of the chloro-bromide emulsions.

10. Use a contrasty (hard) paper for a flat negative, and a soft paper for a contrasty one. Remember that a dense negative does not necessarily call for a soft paper; the criterion is the degree of difference in density between highlights and shadows. If the difference is marked, use a soft paper. If it is slight, a hard paper. Remember, too, that even the most judicious use of papers other than normal is a makeshift; full tone range, the proper gradation from absolute black to pure white, is best obtained on normal paper.

11. Where the use of a hard paper is not warranted by the slight degree of contrast desired, underexpose normal paper and overdevelop. For a soft effect, overexpose and underdevelop.

12. Make sure that the negative and

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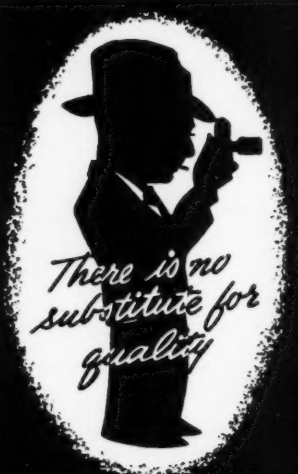


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the negative carrier are absolutely clean. Don't *blow* on the negative to eliminate dust particles. Use a piece of linen to wipe the glass-plates of the negative holder; for the negative, use a camel's hair brush.

13. Place the negative in the *center* of the film carrier. Faulty illumination usually affects the edges and the corners of the field; the light is most likely to be uniform in the middle. This rule is of especial value where the negative is smaller than the film carrier.

14. Study the projected image. Decide what kind of dodging you'll need, and how much. It's easy to plan this in advance, when you have no paper in the easel and don't have to worry about an inadvertent slip of the dodging card.

15. Remember the essential difference between cropping a contact print and a projection print. The former must be cropped on the trimming board *after* it is made; the latter is cropped *before* projection. Don't hurry. Manipulate the image—by moving the lens up and down and shifting the easel—until you get the most effective result. Cropping will make or break a picture.

16. Focus accurately with the lens wide open. Choose a thin line in the subject. Before exposing, reduce the diaphragm aperture to $f/5.6$ or $f/8$. This will insure maximum definition.

17. Don't, in the beginning, go in for posters. There's a ceiling to magnification. Over-enlargement means graininess, fuzzy outlines and poor tone quality. Unless your negative is needle-sharp and has fine grain, be content with an 8x10.

18. When you take a sheet of projection paper to put in the easel, make sure you close the box or envelope. Adhere rigidly to this rule; you'll do so automatically after a while. Many an amateur, in his anxiety to inspect a print in the hypo, has switched on his white light precipitately, only to discover to his chagrin that he forgot to protect a box of paper.

19. *Don't guess as to exposure.* Make test-strips. The strips should be generous in size; it's mistaken economy to skimp.

Place the strip at the critical part of the projected image, that is to say, at the spot where it will take in as much of the tonal scale as possible. Cover the whole strip with a piece of cardboard, switch on the enlarger light, slide the cardboard back to expose a narrow section (one-quarter or one-fifth) of the strip for five ticks, shift the cardboard farther back and expose another section for five ticks, and so on. When the entire strip has been exposed, it will have five bands, let us say, with exposures of 25, 20, 15, 10 and 5 ticks respectively. Develop the strip and immerse in hypo. Turn on the light and study the print. The exposure time of the band in which the blacks are black, the whites are white and the tonal gradation is good, is the proper exposure.

20. If the first test strip leaves doubt as to exact exposure time to use, make a second test, profiting from the first to vary the time only two seconds between the bands.

21. Don't rely on counting by yourself for timing the ticks. You may have friends who claim to have extraordinary metro-nomic gifts. Test them and see how wrong they are. If you haven't a photographic timer, get a cheap alarm clock with a good loud tick.

22. Don't make exposures shorter than 15 nor longer than 50 ticks. If you make them shorter than 15, you'll find it hard to judge the correct time from the test-strip, and there'll be too little time to dodge. If you make them longer than 50, you'll run the risk of fog.

23. Allow the print full development time, three minutes 70° F. If because of projection overexposure, the print darkens too soon and you yank it out ahead of time, the blacks will be a dull gray. If because of underexposure you prolong development, you'll gray the highlights and fog the print.

24. Remember that dodging is an essential part of enlarging. Very few negatives are perfectly balanced in density: some parts are apt to be thin, some blocked up. Dodging makes it possible to

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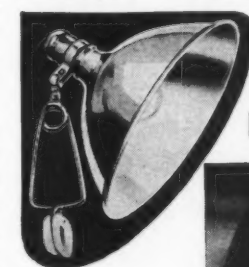


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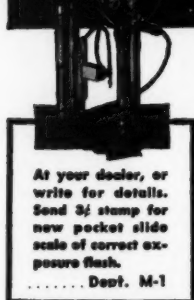
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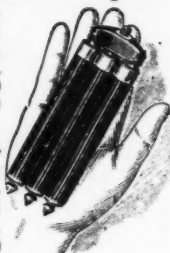


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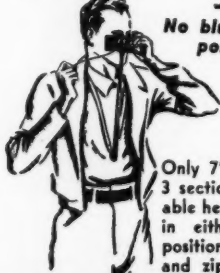
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correct this by (a) holding back the former, and (b) over-printing the latter to bring out shadow detail that otherwise might be lost in a solid area of white.

25. When dodging, hold the card high, near the lens, and *keep it moving*. Otherwise a line of demarcation will be apparent at the edge of the dodged section. Holding the card high also will give better control.

26. Don't depend on your enlarger-switch for timing. Use the dodging card instead. Place it between the lens and the easel so as to protect the entire print; switch on; withdraw the card with a quick sideways motion; expose for the proper count; swiftly replace the card to blot out the light; and then switch off.

27. Don't plunge the print helter-skelter into the developer. Slide it sideways *face up*; agitate the developer to remove all bubbles; turn it face down; keep rocking the tray. View the print every 20 seconds or so to observe the progress of development, but keep it *face down* for the most part.

28. Use an acetic acid short-stop.

29. Don't work with exhausted solutions. As soon as the developer shows a sediment, discoloration or soapiness, throw it away. Also watch the hypo.

30. Make sure, after handling a print in hypo, to rinse and dry the hands before fingering paper for the next enlargement.

31. Don't switch the white light on too soon after placing a print in the fixing bath. Allow at least 30 seconds.

32. Wash thoroughly in ten changes of water or one hour in running water, if the print is worth keeping permanently.

33. Don't hurry any stage of the process. Establish an orderly procedure and adhere to it. Avoid the temptation of mass-production. It's not how many prints there are in your portfolio, or how huge they are, but how good they are in content and technique.

Practice makes perfect and if you will stick to one brand of paper and one developer until you learn to control both,

you will be well on the road to making consistently good prints. A few good movie stills, such as those placed in cases in front of theatres, are a great help. If you are having trouble in making good prints you might try keeping a couple of these in your darkroom to compare their tones with yours while your prints are developing under the safe light.

Acid-Resisting Corks

The "stubby" beer bottles make good solution bottles for quantities of twelve ounces or less. The brown glass protects the contents from light. Corks to fit can be obtained at your hardware store, and when you buy the



corks get a package of paraffin. Melt the paraffin and when liquid throw in the corks. Let boil a few minutes, turning corks with a stick. Remove and drain. When cool they are

ready for use. Rubber stopper should be used where possible.—R. L. McColm.

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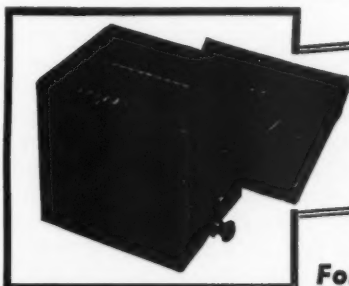
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Miniature Photography System

(Continued from page 43)

the number of seconds required to make the printing exposure; from a second to a minute or so, depending on the negative density and the paper employed. Develop in solutions recommended by the manufacturer of the paper and you've made your first enlargement—it's as simple as that.

Correct exposure time is determined by making a test print. Cover part of the sensitive paper with a sheet of black paper or cardboard and expose so that parts of the print have an exposure of 5, 10, 20 and 30 seconds respectively. Develop for exactly three minutes, fix for about two minutes, and inspect the test print under a white light to decide which is the correct exposure time. After a few practice prints you will find yourself making clear, sharp enlargements. It is then that the true advantages in the miniature system of photography will become apparent—it is then that you will become interested in obtaining all of the novel effects to be secured only through projection print control. This is described in "Controlled Enlarging," a book-length feature which appeared in MINICAM for October, 1938, and contains a complete system for obtaining perfect enlargements and salon prints.

One of the advantages, unique in miniature photography is that 35mm. negatives can be made into black and white positives and bound into standard 2x2 glass slides. Slide binding materials such as are included in the Argu Slide Binder Kit are inexpensive and easily secured, and with your positive transparencies made into slides, it is easy to project and show pictures to groups, life-size in black and white or full natural color. (See: "Project Your Pictures" in MINICAM for November, 1938, page 100.)

An outstanding example of an efficient projector designed for glass slide work is the Argus CP, which includes a powerful 100 watt bulb and a high quality color corrected four inch focal length lens. Projectors of this type are efficient, compact,

and inexpensive. Other types of projectors such as the Argus model B will project positive film strips or glass slides and are extremely flexible in this respect. The advantage of single glass slides over film strips is that the continuity of your story telling pictures can be changed to suit the circumstances.

Many industrial firms are using glass slide projectors to tell selling stories to groups of customers, and ambitious camera enthusiasts are finding a profitable market for slides among such concerns.

Miniature photography has everything. It includes a camera for taking unposed candid shots, indoor action and stage pictures, portraits, commercial and scientific subjects, and prints can be made inexpensively to any size as required or projected life-size in black and white or full natural color. The system of miniature photography is playing an important part in the commercial world today, and as a hobby, it is fascinating, dignified, educational and inexpensive.

Cameras for Cops

(Continued from page 40)

great economy was possible in lens and shutter selection. For the 4x5" camera an f/7.5 anastigmat lens of 6½" focal length was chosen. This provided an angle of view of about 45 degrees, which is about the same as the angle of view provided by the normal lens of most cameras.

A maximum lens opening of f/7.5 must sound pretty slow these days when even f/4.5 is looked down upon and the standard equipment of many moderate priced machines is f/3.5. But the police camera, set up on a tripod to photograph stationary objects, is in no hurry. It usually is stopped down to f/11 or f/16 and if the day is late or dull a time exposure may be given.

It also was necessary to economize on the shutter and this was easy as slow shutters and lenses usually appear together. So the f/7.5 lens was obtained mounted in an Ilex Precise shutter with speeds of 1/25th, 1/50th and 1/100th of a second, and bulb and time.

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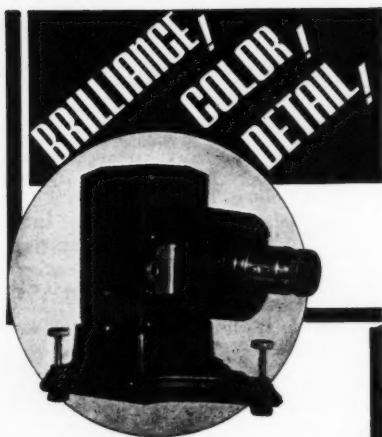
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The parts, as designed by Borkenstein, were purchased from several manufacturers and the cameras assembled at the state police laboratories. The result is a box which can stand bounding around in police cars 24 hours a day and still take accurate pictures, all at a cost of \$30 per camera. About half of this budget went for the lens and shutter, and the remainder for box, bellows, plateholders, etc.

The department now has cameras, and, what is more, the men know how to use them.

Making the pictures, however, is often just the beginning of recording an accident. As important is the officer's knowledge of the technical data concerning the picture presented as evidence.

"The officer or person making accident pictures," Borkenstein emphasizes in his lectures before the class, "must be trained to qualify as a technical expert to qualify in court.

"Legal photography is fascinating to anyone with an analytical turn of mind who is interested in photography. Often it is of great aid in the prosecution of criminal cases for two reasons. Photographs can present the facts and physical circumstances of a case in a manner that is simple and easily grasped. By using a good photograph that conveys an accurate impression of all the details in a crime scene as a piece of evidence, long detailed explanations and descriptions are eliminated.

"The majority of people are visual minded. The picture created in their minds when looking at something is much more vivid than when the same picture is described to them.

"The second reason for the profuse use of photographs is that a photograph of a large or perishable piece of evidence is accepted in court just as readily as the actual evidence. For instance, a car involved in a hit-and-run case could not be brought into court, while a photograph emphatically conveys the evidential value of the damages to the car.

"The photographer should positively

know how to retain all the details in the scene or subject before his camera, keeping in mind at all times the story his photograph will tell the jury.

"His photographs should be so revealing and require so little explanation that they will withstand all the brilliant oratory and attacks that the defense may use to discredit them.

"The camera is not a purely mechanical instrument and for that reason the photographer must prove himself capable before his photographs will be admitted as evidence.

"If the camera were perfectly mechanical, every photograph would be perfect and ideal, but in practice, a photograph reflects the skill and care of the workman who made it. For this reason, the legal photographer must know more about photographic theory than the average commercial photographer. He must be prepared to answer all the questions that the defense might ask in cross examination.

"Photographs should always be made from a point that will give the view exactly as the juror would see it if he were to go to the scene. In order to establish this viewpoint a very accurate record of distances and directions is necessary. For instance, in an accident photograph, the proper situation of the camera might show that a traffic light was obstructed from the point the driver entered the scene of the accident. When a number of photographs are made of the same scene, the recording of those points of view is very necessary to avoid confusion.

"The defense is likely to ask the date and time of day, the exact location, the exposure, the type of film, the developing time, the type of printing paper used, the degree of enlargement, filters used if any, height of the camera above the ground, degree of tilting, and any other possible question.

"The points may or may not have any direct bearing on the case, but if this information is instantly available while the photographer is on the stand, it will lend an air of reliability to his testimony. Lack

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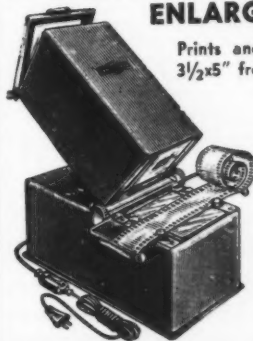
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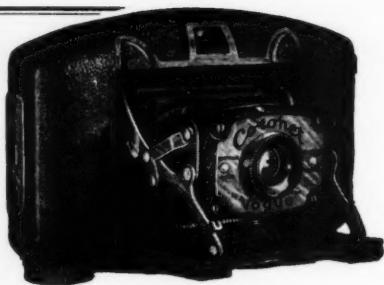
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of any of the vital information only leads to embarrassment and confusion and possibly to disqualification.

"Commercial and legal photography are closely related," the laboratory technician continued," but in legal photography no retouching or "faking" such as is frequently employed in commercial photography, can be permitted.

"Commercial photography conveys facts to an uncritical public, while legal photography conveys its facts to a very critical thirteen—the judge and jury."

Other branches of legal photography by the State Police are to be explored with the new cameras. State detectives, working out of the various posts, are to use the cameras for copying documents and photographing evidence in their investigations of miscellaneous crime.

A check involved in a forgery case would certainly be damaged by being handled by the defense, the prosecutor and the jurors, while photographs will provide each of these people with a duplicate copy that is a faithful reproduction of the original, while the original is kept in a safe place.

Already the camera has played a large part in investigations and prosecutions. At West Lafayette, the department technician photographed the "footprint" left by a man's peg leg near where a still was operated. Later the suspect was tied into the case by comparing a picture of the end of the peg-leg with the photograph of the impression.

Equipment issued to each police car and the officer in charge, includes a camera, hand-flash reflector, three flash bulbs, two film-holders, and a tripod.

Synchronizers are to be added to the flash equipment, although only open flashes can be made at present.

Indiana has decreased its annual accident toll tremendously in the past year. With cameras to aid in the recording of these crashes and point out the hazards of driving and defects of highway engineering, even more will be done.

"No Grain" Negatives

(Continued from page 28)

the chances are that the sulphite was not up to standard. Dried hypo with its stronger content will also react to produce a thin image. Such accidents as this bring us to an important phase of physical development. Remember that physical development is essentially a matter of "silver plating" the negative image upon the original emulsion. It would seem that this would be a good method of intensification. Fortunately this is just as easy as it seems. The one thing is that the film to be intensified must have been so thoroughly washed that not a trace of chemicals remain.

Intensification, (which may be applied to a negative originally developed by the chemical method as well as to physically developed ones), requires a stronger solution than does development. The formula for the intensifier is:

Water 8 oz.
Silver nitrate 16 grains
Thoroughly dissolve, then add
Dilute ammonia $\frac{1}{8}$ oz.
(Made by diluting strong ammonia 1:10)

The negative is intensified, preferably, without presoaking, although the film may be wet if desired. The intensity will be doubled in about twenty minutes. There is only one precaution. The intensifying solution is cloudy, seemingly filled with a fine powder. As long as this powder appears completely suspended, that is as long as the solution appears uniformly cloudy, the solution is working. But as soon as the solution seems to clear at the surface, and the suspended powder starts to settle out upon the film reel, discard the solution and add fresh.

Normally a solution will continue to work for about one hour. Unless unusual conditions are encountered it is safe to leave the film in the solution forty-five minutes—twice as long as is necessary to double intensity. This silver intensification may be repeated as often as desired.

Of course, the intensification may be carried out in full light.

Physical development will work, every

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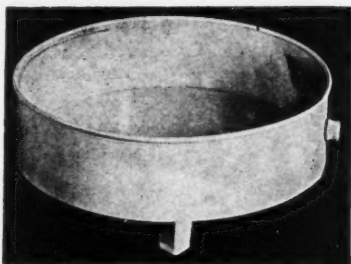
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time. But as already pointed out, directions must be followed exactly. Tanks, graduates and other utensils should be non-metal and must be chemically clean. Use fresh chemicals. Do not let the temperature rise. Agitate during development. Keep utensils clean. It is unnecessary to increase the exposure over normal but — **FOR PHYSICAL DEVELOPMENT EXPOSURE MUST BE CORRECT.**

The success of physical development depends upon having the pH (alkalinity) of the solution rather exact. This lies between 9.20 and 9.30. As 7.00 is the neutral point between acidity and alkalinity, with factors above 7 being alkaline, it will be seen that the developer is an alkaline one. Instead of making the worker responsible for this somewhat delicate measurement of alkalinity, the formulae have been worked out so that the proper alkalinity will be achieved if fresh chemicals of a recognized photographic brand are used. Any of the reputable, American, photographic chemicals are all right; many European ones are not. This applies most specifically to the anhydrous sodium sulphite.

Historically, physical development is a process hoary with age. It is older by far than flexible films or gelatin emulsions. It antedates anastigmat lenses and pocket cameras. It was universal in those days when a "light and portable" photographic outfit was described by a contemporary technical writer as "an easy load for a man and a small boy." But the physical development of that day was a tricky and difficult process. The modern version we owe largely to the individual efforts of Dr. Allen F. Odell. Those of us who know physical development were introduced to it largely through the efforts of this indefatigable researcher.

The advantages of physical development are many, the most important to the working amateur being the fineness and uniformity of the grain pattern, and the absence of compression in shadow and highlight. The latter factor should, perhaps, be more fully explained. When a

photographic negative is exposed in successively uniform steps, the resulting silver image densities are not uniform in progression. For example if a negative is exposed to light of such intensity that a one second exposure will give a barely visible deposit, the range of exposure might be:
1—2—4—8—16—32—64—128—256—512—1024.

In other words each exposure is double the preceding one. In physical development the opacity of each step will be approximately double the preceding one, but with our conventional methods of chemical development, the relationship might well be:

1—1.2—1.4—1.8—2.6—3.6—7—15—30—40—45—48—49.

This means that in deep shadow and in highlights a considerable difference in tone in the original is represented by a minimum difference in the density of the negative deposit. We might also add that in the above example we do not mean to indicate that physical development will give a range from 1 to 1024 in density while the chemical development is held down to 1 to 49. Arbitrary figures were used merely to illustrate physical development. Moreover many outdoor subjects have a brightness range far too great to be recorded by any negative material. The important point is that in physical development we obtain *proportional* reproduction which corresponds to the tonal scale of the original, without the loss of differentiation in shadow and highlight which is characteristic of chemical development.

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Valentine Ideas

(Continued from page 52)

vener, and the heart cut from a large sheet of corrugated cardboard, painted solid color. The other side may be utilized for a "bull's-eye" target, if this motif is desired. Lettering may be done with India ink upon the print or negative.

The woven-hearts valentine is made of two heart-shaped prints woven together. Two prints of the same size are made, heart-shaped, and with white margins. Place the two prints together, one on top of the other, and with a sharp knife or razor blade cut chevron-like slits in the prints about a half inch apart. By placing the two prints together and cutting the slits through both at the same time, the slits will be exactly alike.

To weave together, start the points of the hearts together, working the tip of each "chevron" under and over the alternate chevrons of the other heart. The two prints will be joined so that it is hard to separate them although the features of the two photos cannot be recognized until they are separated. This is the point of the valentine, as expressed in the greeting written on it: "If you'd know whose heart is thine, then unweave this valentine." To make the effect more striking, each picture may be toned, one sepia, the other blue or red.

A variation of the heart and Cupid theme is the cutout valentine. An 8x10 enlargement of a child was made, and the wings painted on the print. The print was glued to a piece of thin cigar-box wood. When dry, the figure was cut out, wings and all, with a fine-toothed coping saw, and the edges carefully smoothed with fine sandpaper. The base was a thin piece of soft wood, with a slot cut in it to accommodate the base of the cutout figure.

Many other ideas will present themselves after one has started to work, and when you have finished, you will have some unusual valentines. To commercialize on the idea, one could no doubt make a bit of money by making such novelties for interested friends.

Photography

TRADE NEWS

Improved Exposure Meter

Designed for increased sensitivity, the new Photrix SS Exposure Meter, will register under such dim light conditions as were formerly considered below the measurable light limit.



While the meter is in the aiming position, it is not necessary to take any readings of figures; just set the ring so that the red index registers with the needle indication. This automatically lines up all usable combinations of film speed and exposure time.

Distributor is Intercontinental Marketing Corp., 8 West 40th Street, New York City. Price \$17.50.

Slide Viewer

The Bausch and Lomb new Slide Viewer for color films, makes it possible for the miniature camera enthusiast to enjoy the real beauty of his color (or black and white) slides without a projector or screen. The case of this new Slide Viewer was molded in Bakelite by the Auburn Button Works of Auburn, New York.



In operation the slide to be viewed is placed through the side opening, the light turned on by means of the conveniently placed switch on the front of the case and the film observed through the first-quality ground and polished 3/4" lens. The observer, without having to darken the room or set up a screen, sees a brilliant enlarged view that in addition creates a very noticeable illusion of third dimension. There is no focusing nor any moving parts to get out of order. The light from a standard 25 watt Mazda bulb, properly filtered and diffused, brings out the maximum color value of any film.

New Adhesive

AN ADHESIVE which combines the everlasting qualities of good rubber cement with the ease and smoothness of application of mucilage has just been introduced to the photographic field by Wholesale Radio Service Company, Inc., 100 Sixth Avenue, New York City, under the name Lafayette "Foto-Stik."

Applied in a single water-thin coat this new material forms a rubber-like bond between photographic prints and mounting material which no amount of flexing can disturb. This bond forms in a few seconds, requiring neither heavy nor continuous pressure. Any surplus is cleanly removed after drying by simply rubbing with a cloth or sponge eraser.



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New Negative Envelopes

CELLOPHANE ENVELOPES provide a system for keeping and protecting negatives. The subjects can be viewed through the envelopes. Prevents scratches. Envelopes can be marked for identification. Easier to file. The envelopes are at present available in three popular sizes—for 35 mm., 2 1/4 x 3 1/4 and 3 1/4 x 4 1/4. Distributed by National Photo Labs, 816 Third Avenue, New York City.

New Agfa Film Prices

THE GREAT popularity which has been accorded the new high-speed Agfa films has resulted in important price reductions. The new prices apply to the sizes noted below of Superpan Press roll film, Superpan and Superpan Press film packs, 35 mm. Ultra-Speed Pan miniature-camera film, and 35 mm. Infra-Red film. All Agfa panchromatic films now sell for the same amount in each size.

The new prices:

Superpan Press Roll Films	New List Prices
A-8	\$.30
B-2	.35
PB-20	.35
D-6 (A new size)	.40
PD-16	.40

Superpan Film packs	
3 1/4 x 4 1/4 in.	\$1.25
9 x 12 cm.	1.40
4 x 5 in.	1.50
5 x 7 in.	2.50

Superpan Press Film packs	
6 x 9 cm.	\$.75
3 1/4 x 4 1/4 in.	1.25
9 x 12 cm.	1.40
4 x 5 in.	1.50

35 mm. Ultra-Speed Panchromatic	
15- exposure Darkroom Loads	\$.35
36- exposure Leica Cartridges	1.00
36- exposure Contax Spools	1.00
Darkroom Loading	
27 1/2-foot notched rolls	1.80
55- foot notched rolls	3.50
100- foot unnotched rolls	6.00
35 mm. Infra-Red Miniature Camera Film	
15- exposure Darkroom Loads	\$.40
36- exposure Leica Cartridges	1.20
36- exposure Contax Spools	1.20
27 1/2-foot notched rolls, Darkroom Loads	2.15

Table Top Tripod

FOR TABLE TOP photography, there is the new Raygram Combination Table Tripod and Tilt Top. It is 7 1/2 inches high and solidly built for holding even the heaviest cameras. Has three removable legs, furnished with rubber tips.

The tilt top is made of solid brass with swivel ball socket which permits forward or backward tilt of 180 degrees, and swings in any direction. Price of complete unit, \$2.00. The tripod or tilt top can be bought separately at \$1.00 each.

Further information may be had from Raygram Corp., 425 Fourth Avenue, New York City.

35 mm. to 116 Developing Tank

THE NEW Fedco Adjustable developing tank with the new light-proof Snap-Lock cover has the following features: Made of genuine bakelite. Will not warp. Has a wide funnel for filling and side vent for pouring. Complete with agitator rod. Center core is hollow to allow insertion of thermometer.

The spiral-feed reel is adjustable to all sizes from 35 mm., 36 exposures, to 116-size film inclusive. Price is \$3.75.

For details write Raygram Corp., 425 Fourth Avenue, New York City.

How to Use Filters

HINTS FOR using Tetrinite camera filters:

1. Avoid overexposure. Overexposure will neutralize the action of most filters and give poor results.
2. Filters require an increase in exposure, but with modern films the increase is slight. Because exposure meters indicate full to overexposure, the Tetrinite light

blue and yellow filters have no indicated increase. Use them at the meter reading. In bright sunlight the same is true of the medium yellow when used with panchromatic film.

3. Keep filters clean, free from dust and protected from light when not in use. Filters are relatively permanent, but protection from light is an advisable precaution.

Hypo Test

EXHAUSTED HYPO means impermanent prints. Fix-Test comes in a small bottle fitted with an eye dropper. One or two drops of Fix-Test is dropped into the fixing bath. If it stays clear the bath is active, but if a cloudy precipitation forms the fixing bath is exhausted and should be discarded.

Flash Bulb Guard

TO ELIMINATE any possible danger from breaking glass bulbs, the new safety Flashgard is used. Made from specially treated material, it requires no increase in exposure if in good condition. In appearance, the Flashgard is a transparent, non-inflammable cap that looks like a piece of celluloid.

Information about the Flashgard or Fix-Test items is obtainable from Wholesale Photographic Supply Company, 145 East 60th Street, New York City.

Sensitometric Screen

THE PHOTO LAB Filter Meter is a combination viewing filter and filter table.

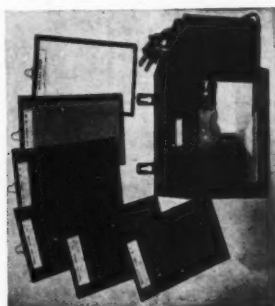
Subjects are viewed through a small window on the filter viewer in which viewing filters of various colors appear, as a disc is turned with the finger. When the desired effect is obtained in the subject, tables on the "Filter Meter" tell which filter to use and its filter factor.

The Photo Lab Filter Meter is a comprehensive filter guide for all types of photography. It is manufactured by the Photo Lab Products Company, 2916 Pioneer Avenue, Cheyenne, Wyoming.

Also manufactured by the above company is the Photo Sensitometric Screen. This gives an accurate means of measuring and matching paper and negative contrast. The Sensitometric Screen makes more simple and accurate the fitting of paper to negative. The Sensitometric Screen sells for \$2.

6-in-1 Safelight

The new Stuart 6 in 1 Safelight is made entirely of metal and comes completely equipped with lamp and cord, as well as six interchangeable slides suitable for contact prints, enlargements, slow film, fast chrome film, and panchromatic film.



Also included is a viewing slide which can be used for viewing negatives or transparencies and which may be improvised as a retouching stand. Two hangers adapt the light for hanging on the wall or it can be placed on a table for closeup work. Price, complete, \$3.95. Manufactured by the Stuart Studios, 729 S. Wabash Avenue, Chicago, Illinois.

Ace Hard Rubber Trays

The new process Ace genuine hard rubber trays recently announced in 5 x 7 and 8 x 10 sizes has now been rounded out to include an entire range for amateur and professional use. The additional sizes now ready are 4 x 6, 11 x 14, 14 x 17, 18, x 22 and 22 x 24.

The entire line is made of solid Ace genuine hard rubber. This material widely used in the chemical process industries is fully resistant to all photo developing, fixing and finishing solutions. Mere rinsing after use keeps

Bass Bargaingram

Vol. 29, No. 1.

JANUARY, 1939

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Ikon A — Nestor F4.5 lens, Prontor shutter with Eveready case. . . . \$30.00

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3 1/4 x 4 1/4 SS Auto Loop Focus Graflex with 21 cm. Carl Zeiss Tessar F4.5 lens . . . adapter . . . like new. \$135.00
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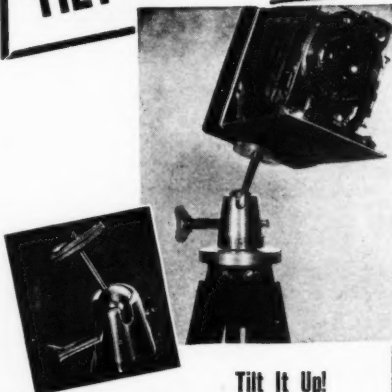
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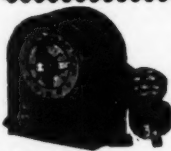
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New Color Minicam

DEVIN cameras are used for their color work by many outstanding photographers such as Nickolas Muray, Paul Hesse, Victor Koppier, George Hurrell, Martin Munkacsy, Anton Bruhl, and others. These professionals use the 5"x7" model. A new 2 1/4"x3 1/4" model Devin one-shot color camera now is available.



DEVIN 2 1/4" x 3 1/4" COLOR CAMERA

Attempts to make a two-mirror, one-exposure color camera were made early in photographic history. A tri-color camera must have an elaborate optical system for dividing the one image which comes through the lens into three parts, directing these parts to three separate plates, passing the light through three filters, and doing all this without in any way distorting the image. All parts must be made with absolute precision. The camera box must be rugged and strong to protect the delicate internal parts.

The new Devin 6.5 x 9 cm. one-exposure camera is the first and only camera offered on the American market which embodies all the features found practical and successful in professional one-exposure cameras. It is, in fact, a duplicate of the large professional two-mirror cameras made by this company, and used by leading professional photographers throughout the country. It has, in addition, features which make it a completely versatile hand camera—small size, automatic focusing, direct view-finding.

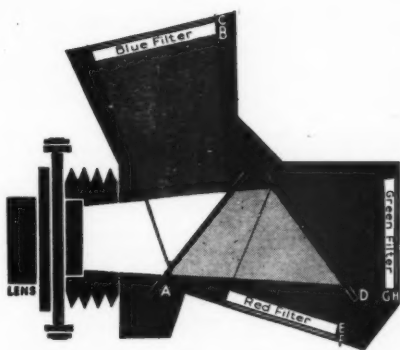
The new 6.5 x 9 cm. Devin tricolor camera is intended primarily as a hand camera. It is equipped with a highly corrected F4.5 anastigmat lens in compur shutter. Focusing is fully automatic, the lens being coupled to a telescopic range finder of advanced type. A direct view-finder is placed directly along side the range-finder, so that both can be used almost simultaneously. The usual ground glass focusing will be provided for the many types of work which require the camera to be placed on a tripod.

The relative exposure received by each plate (the portion of the total light directed to that plate) is so balanced in the Devin camera that after development there is an approximately uniform deposit on all three negatives in those areas where a neutral gray object has been recorded. The "filter factors" are thus automatically provided for in the camera itself.

The camera is balanced to either sunlight or incandescent light, depending upon the position of the red and blue filters. A simple exchange in the position of these two filters will adjust the camera for a change from one light-source to the other. No compensating filters over the lens are necessary in either case except for unusual lighting conditions.

The camera is equipped with the standard Wratten A, B, and C5 tricolor filters.

Plates are used in preference to film because they do not stretch and buckle. There is no way in which variations in film can be completely avoided during processing, and these variations will make it almost impossible to secure an accurately registered print by most processes.



- Optical system of the Devin tri-color camera. A portion of the light passing through the lens is reflected by the transparent pellicle mirror (A) to blue filter (B). All colors excepting blue are filtered out and this blue light passes on to expose a plate (C), thus forming the "blue record."

The light remaining after passing through the first mirror is again reflected by the second mirror (D) to the red filter (E), thence to the plate (F), to form the "red record."

The residual light passes to the rear of the camera, and through the green filter (G) to form the "green record" at (H).

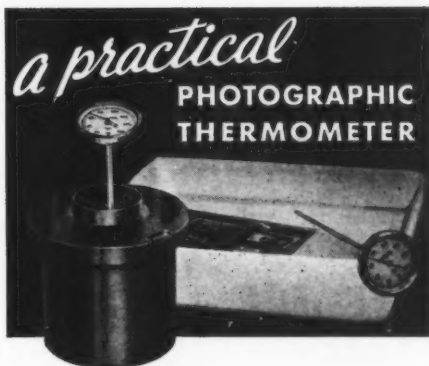
Any process of printing color photographs on paper requires first of all a record of the relative amount of the three primary colors reflected from all parts of the subject photographed. This record is obtained directly by making three exposures of the same subject through the standard red, green, and blue filters, respectively. Negatives thus obtained are known as "color separation" or just "separation" negatives. When there is any possibility of movement in the subject, it is essential that all three records be made, not only in an exceedingly short time, but also simultaneously. This is accomplished by the one-exposure tricolor camera.

Separation negatives so obtained may be used to produce a print with any subtractive color printing process. This includes Carbro, Wash-off Relief, Chromatone, and the numerous variations of the imbibition (dye) processes.

The ideal one-exposure camera divides the light image entering the camera through a single lens into three completely separate parts. In the Devin camera this is accomplished by means of two semi-transparent mirrors. The image formed by light passing through the lens reaches the first mirror, which reflects a portion to a plate at one side of the camera box and transmits the balance; this reaches a second mirror, which reflects a portion to a plate at the other side of the camera; and the balance is transmitted to a plate at the rear of the camera box. In front of each plate is one of the standard Wratten tricolor filters—red, blue, or green. The result of an exposure with such a camera is three separation negatives identical in every respect except the manner in which they record the varied colors of the subject.

Note that all three plates are exposed independently of each other. This is possible only in a one-exposure camera with two mirrors. There is a variation of the one-exposure camera known as the bipack type. It employs only one mirror. A portion of the image reaching this mirror is reflected to a film at one side or the top of the camera, and the balance is transmitted to a "pack" of two films, with their emulsion surfaces face to face. In order to expose the rear element of this "pack," light must pass through the relatively opaque emulsion of the front element. This causes an absolutely unavoidable diffusion in the rear element, destroying both brilliance and definition of texture and detail.

For a free booklet on the new Devin camera, price \$355.00, or for information on the carbro process, write the Devin Colorgraph Co., 305 East 43rd St., New York City.



- ALL METAL . . virtually unbreakable!
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FOTOFOLIO MINIATURE NEGATIVE AND ENLARGEMENT FILE

Miniature camera fans have been asking for a way to keep negatives and enlargements. The new Fotofolio, made in book form, will accommodate enlargements up to six inches wide. Envelopes with scratch-proof and dust-proof fillers to accommodate 35MM. negatives are located inside back cover of Fotofolio. Gummed cloth hinges are attached to the leaves ready for mounting prints in step formation, 28 to the page. See these at your dealer's or send for illustrated booklet No. 12.

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Robot Remote Control Attachment

A new attachment for the Robot Camera is the "S. F." remote control. It operates on the electro-magnetic principle and works the camera with the aid of a small dry cell and 15 feet of special lightweight cable. Smartly finished in chromium, the S.F. is foolproof and positive in its action.

Because of the unique action of the Robot, which allows the taking of a series of 24 pictures without re-winding, the S.F. permits the taking of almost an entire roll of film without approaching the camera for any adjustments. During the set of exposures, the photographer is not forced to disclose his presence or efforts to the subject.

A booklet describing the mechanism may be had by writing to the Intercontinental Marketing Corporation, Robot distributors, 8 West 40th Street, New York City.

Leica Wrist-Strap

PHOTOGRAPHERS who are intent on shooting everyday life "on the wing" have a new accessory at their command—the new Wrist-Strap for the Leica. It also can be used with any other camera equipped with a standard, American tripod socket.

With the camera secured to the wrist by means of this accessory, the photographer may go about his business without fear of dropping the camera; yet, the latter is ready for instant use as soon as a suitable subject comes within range.

The Wrist-Strap has another equally important application; it may be used to brace the camera in the hands when making exposures. This is a highly desirable advantage when pictures are taken under poor light conditions that require the use of the slower, "instantaneous" shutter speeds. In situations of this kind use of the Wrist-Strap either forestalls or minimizes camera movement, thereby insuring maximum picture sharpness.

Slide Projection

OWNERS of Argus, Leica, Contax, Robot and other still cameras using 35 mm. movie film, declare that slide projection enables them to reveal the qualities of color beauty and detail of their work as can be revealed in no other way.

Indeed, one of the principal advantages of slide projection is its low cost. An inexpensive 35 mm. color transparency, for instance, when mounted in the 2" x 2" glass slide holder of the 200-watt Keystone Slide Projector can be projected on a large screen without losing color, brilliance or detail. In order to obtain such brilliant 200-watt illumination without danger of burning or buckling of transparencies, the Keystone Manufacturing Company has built a patented heat absorbing unit into its projector. As a result, a single slide may be shown for an indefinite period without danger.

For more information about the simple technique of slide projection, write to the Keystone Manufacturing Company, 288 A Street, Boston, Massachusetts.

New Automatic Argus

SEQUENCE PHOTOGRAPHY, which permits rapid-fire action shots without turning the film for each picture, will be brought to the popular-price field in the New Argus Model D, 35 mm. camera soon to be announced by the International Research Corporation, Ann Arbor, Mich.

The new automatic-film-advance camera will be in the \$30.00 price range. Negative size is 24x36 mm., standard 35 mm. double-frame. A single winding when the camera is loaded makes it possible to follow action and catch a series of pictures without delay between exposures. Each time the shutter is mapped, the film advances automatically and is in place for the next picture instantly. Danger of double exposure is eliminated.

A new and unique "exposurator" for controlling exposure is embodied in the design. It judges correct exposure automatically. The "exposurator" makes it possible for even a child who has no conception of light values and who cannot even decipher an exposure table to make correctly exposed negatives with accuracy.

Zone-focusing is another feature of the camera. Colored markings on the focusing mount indicate at a glance whether the camera is set for the proper distance. A footage scale is also provided for accurate focusing down to 3 1/2 feet.

The Model D departs somewhat from the conventional miniature camera in that it is shorter and more compact. The lens is a f4.5 triple anastigmat; the shutter has 1/25 to 1/200-second speed.

Movie Titler

MOVIE TITLES may be assembled easily and rapidly with the Brandt & Brandt grooved felt back title board. The board consists of grooved slits $\frac{1}{4}$ " apart into which an assortment of letters and numbers may be inserted to spell out the desired title.

The board is covered with jet black felt. The changeable letters are made of celluloid.

Board No. 773, size 9x12 inches, is \$3.50 complete with an assortment of 100 letters and figures. The letters are $\frac{1}{2}$ " high. Additional letters are \$1.25 per hundred.

The 9x12-inch board may be photographed by the average camera at a distance of 30 inches with a supplementary lens. Brandt & Brandt may be addressed at 132 White Street, New York City.

New 800-foot Reel

THE NEW 800-ft. continuous attachment for Filmo and Filmosound Projectors provides greater "show" capacity than previously available, and also incorporates features which add to the life of the film used.

To eliminate friction between film layers, the convolutions of film are caused to spread apart from one another, making the film run loosely. To further increase film life, a cover encloses the reel entirely, excepting the necessary openings for the film to feed in and out. Possibility of film scratching due to dirt and grit in the air is thus minimized.

The new B&H 800-ft. Continuous Attachment is for use with 16 mm. films, either sound or silent. Eight hundred feet of sound film, at 24 frames per second, provides a 22-minute showing; silent film at 16 frames per second provides a 33 minute showing.

The continuous attachment is now supplied for Filmo silent projector models 57 and 129, and for Filmosound models 120, 138 and 142 with the exception of the variable resistance models. Prices and further information may be obtained by writing Bell & Howell Company, 1801 Larchmont Avenue, Chicago, Ill.

16 mm. Sound Camera

THE AMPRO CORPORATION of Chicago, manufacturers of 16 mm. Silent and Sound motion picture projectors, have just completed arrangements as the West Coast Agents for the Syncro-Sound 16 mm. Professional Sound-On-Film Camera as manufactured by Gumbiner Syncro-Sound, Inc., 3337 Wilshire Blvd., Los Angeles, California.

Heretofore the making of 16 mm. sound motion pictures has been a complicated and technical procedure because of the lack of simplified and economical equipment, but now with the Syncro-Sound Camera good sound pictures can be made by anyone who understands the filming of home movies.

The Syncro-Sound Camera is a precision, professional instrument that produces pictures and high quality natural sound. It consumes 120 watts from 50 to 60 cycle lighting circuit. For location work a small, lightweight converter may be purchased that will operate the camera from a portable 32-volt battery. The Tripod is light in weight, yet rugged enough to support 150 pounds. Height is adjustable from 32 to 64 inches.

Uses for which the Syncro-Sound 16 mm. Camera is most adaptable:—For Police Departments and Law Enforcement Agencies—Crime Reenactment, Evidence Pictures, Recruit Training, Sobriety Tests, Confessions, Personnel Training for Insurance Companies, Department Stores, and all National Sales Organizations. For Industrial and Commercial Pictures—Advertising Campaigns, Sales Promotion, Public Relations, For Personal Uses—Child Growth Records, Travelogues, Weddings, Wills. For Drama and Music Schools—Screen Productions, Talent Tests. For Schools and Universities—Physical Education, Physiology, Dramatics, Medicine, Biology, Physics.

Entirely portable—the equipment packs into three fine black fabricoid cases with chromium trim. Combined weight of all—120 pounds. The complete sound picture equipment consisting of camera, amplifier, tripod, two magazines, microphone, one picture lens, carrying cases, with all connecting cables, i.e.b. Los Angeles, Calif., \$2,975.00.

Folder with complete information will be mailed by the Ampro Corporation, 2839-51 North Western Ave., Chicago, Ill., on request.

Everybody's TALKING ABOUT *

KEMP PRINT WASHER
Keeps your wash water crystal clear. Drain the film from the bottom. Use in sink or basin. Prevents overflow. For negatives or prints.

DEVEL-O-TRAY
Non-breakable. Takes film up to 3 1/4". Needs only 4 oz. of solution. Acid and scratch proof roller holds film down. Ideal for Dufaycolor.

KEMP SHADE
Helps you to get brilliant pictures. Made of flexible rubber. Snaps over lens. Is also a Filter Holder. 6 sizes, .22 to .46 mm.

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ALHAMBRA, CALIFORNIA

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Your 35 mm. roll of film developed and each good negative enlarged to approximately 3"x4".....

End your developing problems! Any 36 exposure roll of film fine grain processed and each good negative enlarged to approximately 3"x4" on singleweight glossy paper for only \$1.00. Send your order in today. It will pay you!

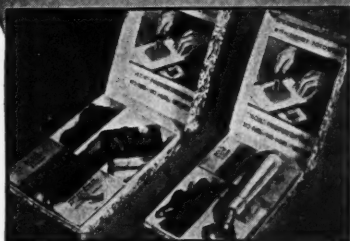
Wrap a \$1 bill around your roll of film (or sent C.O.D. plus postage) and mail with your name and address to:

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with the new

FOTOFLAT DRY MOUNT KIT



**Mounts Prints the "Professional" Way
—Quickly, Cleanly and Comfortably!**

"Mounter's Cramp" is the fatigue that results from mounting prints the old-fashioned way with paste, rubber cement or "corners". You can banish "Mounter's Cramp" by using the FOTOFLAT Dry Mount Kit, consisting of a supply of FOTOFLAT dry mounts and the handy, thermostatically-controlled FOTO-WELDER. Prints go down quickly and stay flat indefinitely... free from ridges and buckles, and you really enjoy mounting.

Dry Mount Kit No. 1—Three packages (108 sheets) of FOTOFLAT Dry Mounts for mounting prints up to 2 1/4" x 4 1/4", one Baby FOTO-WELDER, and one squeegee pad.....\$1.95

Dry Mount Kit No. 2—Three packages (108 sheets) of FOTOFLAT Dry Mounts for mounting prints up to postcard size, one 3A FOTO-WELDER, and one squeegee pad.....\$3.95

FOTOFLAT is the scientifically developed dry mount that may be used to mount *all* prints on *all* boards, even albums, at low heat. FOTO-WELDER is the lightweight "Ironer", shaped to fit your hand... once you've used it, you'll always use it.

FOTOFLAT Re-Fills... 15¢ pkg. and up.
Sizes from 35mm to 16" x 20"; also rolls 16" x 100' long.

FOTO-WELDERS... from \$1.50 to \$9.50
At your dealer or write to Dept. M-PP.

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Made in the U. S. A.

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??? QUESTIONS ??? to the Editor

Q. Can artificial snow and rain be made by spraying ink on a negative or whitewash on a print?

Ans. No. Showcard white ink, used for that purpose as described in the December issue, page 44, is spattered on a separate piece of glass. This achieves a realistic effect by keeping the dots out of focus.

Increased realism can be obtained by using two or three glass plates. One is spattered with small, one with medium and one with large dots, flakes or streaks. The three glass sheets are placed on the paper before the negative is exposed as usual under the enlarger.

Neococcin also can be used. This is a red dye obtainable at photo supply dealers.

Q. What is a condenser? A double condenser?

Ans. A condenser is a lens used between the light source and the negative in an enlarger. It has the appearance of a large magnifying glass and its effect is to concentrate the light evenly on the negative. Some enlargers employ one and some use two of these plano-convex lenses. They are commonly called "single" or "double" condensers, depending on whether one or two are used.

Q. What is a "monochrome" photograph?

Ans. A very good word, the prefix "mono" means "one" and "chrome" means color. So monochrome, literally, means "one-color." A monochrome photograph is a black and white. It ought to come into wider usage in place of the long and clumsy expression "black and white."

Q. Can lantern slides be made by projection as well as by contact printing?

Ans. Yes, positive transparencies can be made with an enlarger.

When making transparencies of standard 35-mm. size by reduction from larger negatives, it is necessary to use an enlarger with a long bellows extension.

If the bellows of an enlarger is not long enough to make a sharp image smaller in size than the negative being used, employ an enlarger lens of shorter focal length.

Or the effective focal length of an enlarger may be shortened by the use of a supplementary lens.

This may be an ordinary portrait attachment (proxar lens), a magnifying glass, or a spherical positive spectacle lens.

MINICAM'S DEPARTMENT FOR CINEMA-MAKERS

Cinécam

ANIMATING MUSIC

How to use the technique of cartoon animation for filming abstractions, and "seeing" music on the screen.

By R. V. D. JOHNSON

Illustrated by the Author

A NEW form of animation, brought to the screen by Oskar Fischinger, has successfully synchronized visual symbols to some of the greatest musical compositions. The coupling of appeals to two senses is not new, and the eye-ear coupling has been tried repeatedly. The color organ was one of these efforts which will long be remembered for its startling beauty, but the Fischinger medium has a particular appeal because it has possibilities for use by any motion picture amateur.

The first of the Fischinger films is projected in black and white. Streaks of light, spear heads, pulsing waves and undulating serpents of light sweep over the screen in every direction, swelling in crescendo and shrinking to bare visibility. Throughout the composition every theme, every chord, every expression is interpreted in line. Short lines darting about on the staccato; long curves swelling across the screen in the growing chords.

Response to this new medium of expression is, of course, markedly individual.

It has appeal, novelty and the shock of the first appearance.

The second group of the Fischinger films is an attempt at interpretation through the use of solids. The subjects are solid cubes, thin slabs, triangular pyramids and similar simple geometric forms painted in colors of primitive purity. These forms are moved by animation in the usual manner; one frame is photographed, the subject moved slightly, the next frame photographed, and so on.

In one selection, the introduction is marked by two huge red cubes moving across the screen. These give way to narrow, vertical panels changing from white to color and back again. A change of theme, and the rhythmic motion of elongated headstone slabs rising and falling from a pure blue ground mark the music with a macabre air. Even later, with a change to gayer mood, groups of pyramids in green, purple and other intermediate colors dance with the precision of trained ballet groups.

This second group is one far more easily imitated by the amateur than the first group, which is fully abstract; but even this does not lend itself to home production as well as does the third.

It seemed from a study of the films that the first and second types were in the nature of studies leading to the development of the third and last type of which the "*Optical Poem*," released by M. G. M., is an example.

Optical Poem starts with discs of colored paper "zooming" from foreground to background in the style familiar to us in film trailers. The rhythm of the music is followed by the intensity of the color as well as by the size of the discs. As the musical theme becomes more involved, the simple disc patterns give way to more and more complex patterns. These later were mingled with square and triangle motifs.

Later in the film, the simple motion is complicated by a horizontally-moving plane, covered with small discs, by the familiar "blowing bubbles" effect, and at one point where a plaintive minor thread ran through the theme, a small silver dart moved slowly across the screen in a direction opposite to the more rapidly moving disc pattern.

The climax is introduced by groups of balls moving in circular paths from foreground to background, while the background itself contains the moving planes of colored discs. The effect is of a

rhythmic kaleidoscope, but even more beautiful because the colors are soft, grayed tones rather than the strong primary colors of the second group of films.

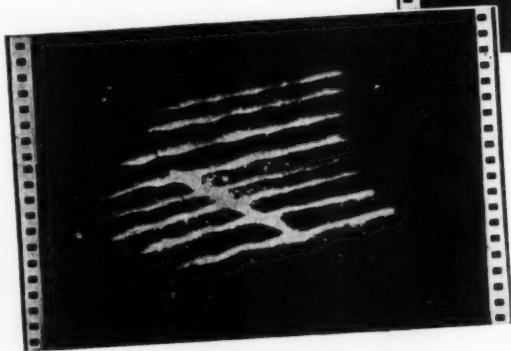
These films are important because they give us an idea whereby the amateur may find a pleasing manner in which to spend winter evenings and at the same time solve the problem of musical accompaniment for his films.

The materials needed are simple. Any ten-cent store will provide celluloid toys made up of various sizes of small balls. For larger sizes, ping-pong balls may be used and dyed with ordinary household dyes. These balls may be arranged upon any standard. One type of support consists of three or four cords stretched from a point directly above the lens to a point directly above the portion of the screen where the ball is to come to rest.

If a ball is hung so that it is just a few inches in front of the camera and a single frame exposed, then the ball moved along the cord about a half inch and another frame exposed, and so on, until the ball reaches the screen, the effect in the camera



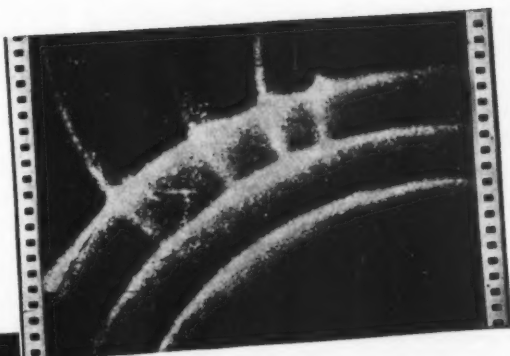
● Still photographs can give only the vaguest idea of the beauty and fascination of the strange shapes, forms and colors moving across the screen.



will be that of a huge colored form which apparently recedes rapidly into the background, growing smaller as it moves, until it comes to rest. By using two or three cords which are slightly divergent, the balls follow differ-

ent paths and two or three may be animated at one time.

Conversely, if the cords converge at the screen and are slightly separated above the camera, the balls will come into the field from both sides and come to rest at the same point in the background. Naturally removing the ball when it reaches the background causes it to suddenly disappear from the screen.



● Black and white reproductions from "Optical Poem" by Oskar Fischinger. This new medium of expression is accessible to every amateur cine camera owner as no special equipment or accessories are required.

these posts endlessly. The discs or other patterns are painted or glued on this paper and after each exposure is moved about a half inch.

A vertical post, such as a broomstick about two feet tall set in a supporting base will give the foundation for the circular motion. Four, six or eight crossarms are attached to the top of the broomstick so that they rotate in a horizontal plane like the arms of a giant swing in an amusement park.

The balls are suspended in any desired arrangement from these arms, and a slight rotation of the arms produces the desired direction of travel.

In use the post is set outside the field so that the balls enter the screen from the side, recede, or advance, and again leave at the same side. Two swings with arms of different lengths will provide a difference in cadence for contrast.

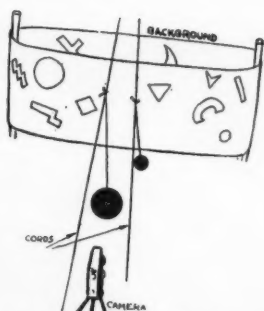
Colored paper discs pasted to a diorama of wrapping paper will provide the moving background. A sheet of paper about 30 inches wide and eight feet long has its two ends glued together to form an endless belt. This is supported by two vertical broomsticks that it may be moved around

So much for the mechanism of animation which is fundamentally the same as used for the production of animated cartoons. If a camera has no single frame adjustment, you can animate by setting the speed control to 8 frames-per-second and then make a single-frame exposure by quickly depressing and releasing the control button.

However in doing this work, we are assuming a musical accompaniment. How can animation, made slowly, a frame at a time, be made to synchronize? This is quite easy, as you can follow the printed music of the selection you expect to use. You have the time indicated by the musical score. Play the selection chosen several times. Determine the relation of the printed score to actual playing time. You will find that you have a definite time factor for each measure of music, a factor which can be interpreted as so many frames of film per measure.

For example, if you have three quarter notes to a measure, and find that you are playing one measure a second, then each quarter note becomes $5\frac{1}{2}$ frames. How-

**SETUP
FOR
ANIMATING
DESIGNS**



- The animated background is a long strip of wrapping paper run endless-belt fashion around a couple of broomsticks or other poles. Designs may be drawn or pasted on this background. "Zooming" spheres are produced on the screen by the use of several rubber balls on strings. After each exposure, the background is advanced a few inches and the rubber balls are moved either toward or away from the camera.

ever, remember that by speeding your projector up to 18 frames a second, rather than sixteen, each note will utilize six frames, an eighth note three frames and so forth. If you have four beats to a measure and one measure a second, then each beat is four frames and so forth.

When such an animation has been made, you will find that it will not be too difficult to play the selection in synchronism, *if you allow the film to lead*. Just play the selection or a phonograph record of it as you watch the film, and soon you will find that you follow the film almost automatically by means of the visual rhythm to which you respond in playing the music.

As a time-eater, this work is quite ambitious, because you use only two feet of film in five seconds, yet these two feet of film have required eighty individual ex-

posures (in 16mm.). In 8mm, 80 frames is but one foot.

If, after your preliminary trials, you find that you can animate ten feet of film during a five-hour evening, you will be doing very well. Yet a film should not be less than a full hundred feet of 16mm. or 50 ft. of 8mm.

However the pleasure to be derived from the film is much more enduring than those usually made. You no doubt will have an opportunity to learn just how long a film can last, for you will probably wear the film out.

The subject is a challenge to all amateurs, especially those who are musically inclined and offers them, through their cameras, an entirely new medium of self expression which will not only amuse but will also provide genuine entertainment.

Super-Super Speed

(Continued from page 59)

tense flashes of light occur at exactly-spaced intervals of time. The exposure time is determined by the duration of a flash of light from a gas-filled tube and not by a mechanically moving shutter. This is accomplished by the sudden release at the desired time of electrical energy stored in an electric condenser.

Using the intense "stroboscopic" light source, single flash photographs may be made of a golfer hitting a ball, as well as a multiple exposure of the same subject.

In this latter form of the process, by taking superimposed photographs at successive intervals of time, a composite photograph is possible which has many uses in analytical studies of complicated motions.

A photograph like Fig. 1 was made of Bobby Jones with a yardstick placed alongside the tee. The images of the ball were 2.25 feet apart. As the exposures were made at the rate of one every 1/100th of a second, the velocity of the ball was 225 feet per second. Measured in the same way, the club velocity before impact was seen to be 166 feet per second, and after impact, 114 feet per second.



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— 72 —
Pages of
Bargains

\$100 "PHOTO DATE" CONTEST

(See Example on page 56)

PRIZES:

First prize \$50, second prize \$25, third prize \$15, fourth prize \$10.

RULES:

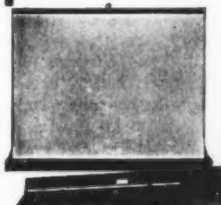
1. Acceptable in this contest is any group of pictures illustrating how three or more people (of any age) can put an evening's activities into a series of photographs.
2. The pictures may be taken outdoors or indoors.
3. Any number of groups may be submitted, provided that each series of photographs is complete in itself.
4. It is not necessary to do your own developing or enlarging. Include complete data as to lighting, exposure, etc., used.
5. Each print should be about 4 x 5 inches or larger. Do not mount prints. Write your name and address on the back of each print.
6. Entries acceptable up to March 1, 1939.
7. Enclose postage if return of prints is desired. MINICAM cannot assume responsibility for any prints.
8. The decisions of MINICAM's judges shall be final.
9. Include a model release for each individual shown.
10. Prints must be original, that is, not previously reproduced. After publication in MINICAM, they may be submitted to other publications if desired.
11. Address: Photo Date Contest, MINICAM MAGAZINE, 22 E. 12th St., Cincinnati, O.

DECEMBER COVER PHOTOGRAPH

"WHAT did she wear?" Questions have come to MINICAM about the December cover photograph in which a charming blonde in a pink flannel negligee was seen unwrapping a shiny new minicam.

The photograph was made by Mac-Nichol Cummins, and the model's negligee was furnished by CORLAINE SHOPS, INC., 414 Madison Avenue, New York City, which company, incidentally, advises that the negligee is available in various colors.

The New Screen Sensation BRITELITE-Truvision DUNBAR SPECIAL Box-Type SCREEN



Crystal Beaded!
30 x 40 Inches!

\$10.00

Britelite-Truvision crystal beaded fabric. Convenient box-type model, sets up anywhere. Solid wood case, leatherette covered. Screen attached to heavy spring rollers... sturdy metal support...

Screen attached to heavy spring rollers... support... no ripples... smooth, clear surface.

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for 35 mm. films or slides.
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Enlargements from continuous strip 3 1/4 x 4 1/2—each... 4c (Individually 6c)

8 x 10—4 for \$1
9 x 9—4 for \$1
5 x 7—6 for \$1
4 x 6—10 for \$1
Enlargements 4 1/4 x 4 1/2 from square negs. Each.....6c

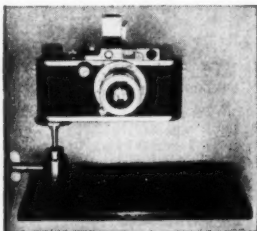
Let us do your developing and enlarging. Finest type work at lowest prices has won thousands of customers for us from coast to coast. Send orders, or for mailing bags, samples and folders—NOW.

35mm size (each envelope holds 4 negs.)... 200 envelopes for \$1.00
2 1/4 x 3 1/4 size (holds 2 1/4 x 2 1/4, 2 1/4 x 3 1/4; or two of most smaller sizes)... 200 envelopes for \$1.00
3 1/4 x 4 1/4 size (holds 3 1/4 x 4 1/4, two 2 1/4 x 3 1/4 and three of most smaller sizes)... 150 envelopes for \$1.00

NATIONAL PHOTO LABS., 816 (M-1) Third Ave., New York

Table-top "Tripod"

The ordinary tripod does not lend itself to table top work or to shooting from the ground or floor for low angle shots.



A ball- and-socket tripod head, or any kind of tilting top fastened to a board, will make an excellent camera support. One machine screw ($\frac{1}{4}$ " or $\frac{3}{16}$ ", depending on whether your

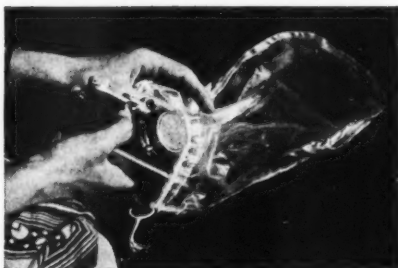
tilting top has a U. S. or foreign size bushing) is all that is necessary to fasten the tilting top to the board, after a hole is drilled near one end.

The board may be 5x7" in size, or larger, depending on the size of camera to be supported. The bottom may be covered with felt or rubber tips to prevent scratching.—*Wm. Watson Wright.*

Camera Dust Protection

Having several hundred dollars invested in the cameras and lenses, I have long fought with the arch-enemy of film and cameras—dust.

Browsing in the ten-cent store one day, I came upon the perfect solution. Oiled silk bags



● Oiled silk bag costs a quarter and protects camera and film from dust.

with draw-strings are sold as refrigerator storage bags for lettuce and other green foods. The smaller size, which sells for 25c, is perfect for a 35 m.m. camera, light meter, filters and sunshade. The larger size, which costs 10c more, will take almost any size camera up to 9x12 c.m., leather case and all.

The oil-silk bag should not replace the leather case, but augment it. The leather case protects against knocks and jolts, and the oil-silk bag keeps out dust.—*Frederic B. Knoop.*

A RAVEN SCREEN IS



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Today's purchase price is calculated in terms of tomorrow's pleasure . . . pleasure in showing vivid motion pictures to friends . . . pleasure in owning a screen that meets time without discoloring.

No screen can do more than reflect the picture qualities of your film. Any RAVEN SCREEN will give your audience the same pleasure you felt when taking the picture. Only when this is accomplished will a screen give adequate returns on your investment.

Consult your dealer before purchasing any screen. His council is based on the experience of helping others. Ask him about RAVEN SCREENS . . . "the screen that reflects yesterday's picture pleasure . . . today."

RAVEN SCREEN

314-16 EAST 35th STREET

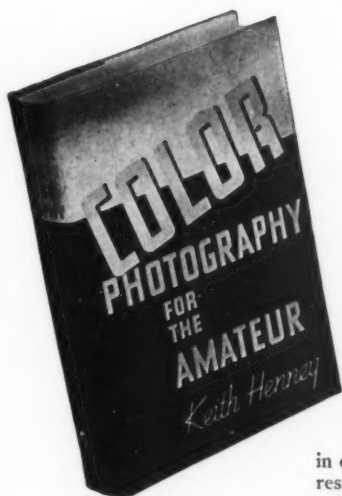


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At last a book which opens up the whole field of color photography to amateurs—a clear, usable, tested guide *written for you* by a well-known amateur who has achieved wonderful results in color photography and shows how you can do the same.

COLOR PHOTOGRAPHY FOR THE AMATEUR

By KEITH HENNEY

281 pages, 5½ x 8

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NOW in one volume, all the information you need in order to take up this branch of photography, or to get better results in it. Fully describes the characteristics, costs, etc., of various methods of color photography, for the amateur who wants to know where and how to get started. Completely covers operations and data for the amateur and professional who wants a clear-cut guide to effective field and laboratory procedures for making transparencies, separation negatives, and color prints.

From this book you will learn

- the optical and chemical fundamentals on which all color photography processes are based
- all about the films and filters needed to complete your camera as a color photography device
- how to expose for better transparencies; how to process film yourself where possible
- how to make color separation negatives with your camera or from transparencies
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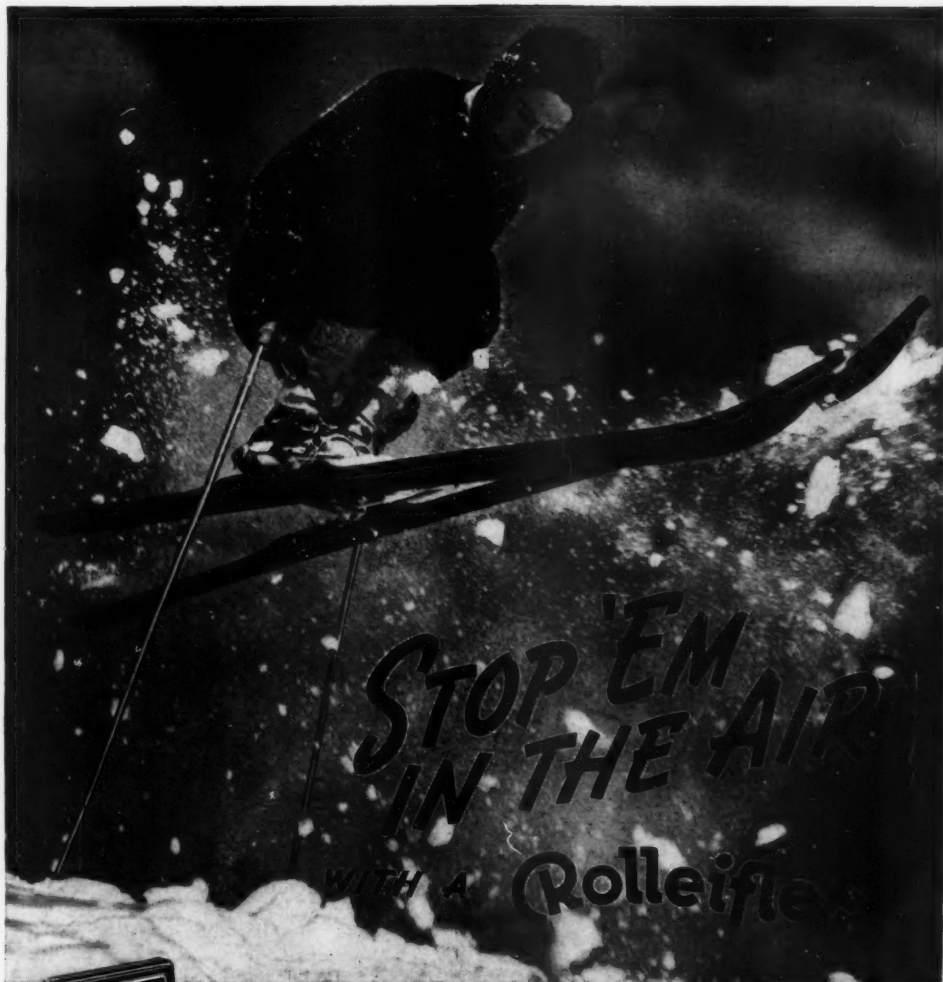
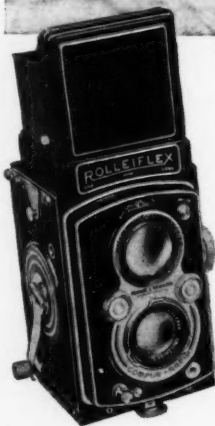


Photo by Herbert Matter, with 6 x 6 cm. Automatic Rolleiflex, f/5.6 at 1/500 second



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